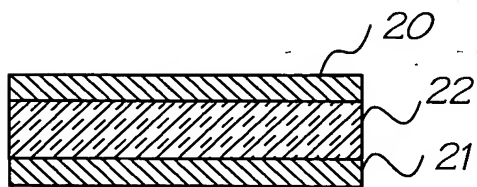


FIG. 3



↓ Cooling

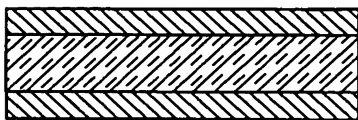
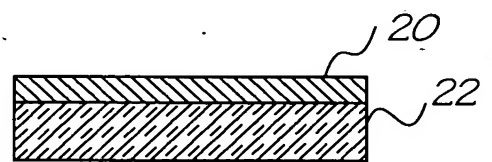


FIG. 4



↓ Cooling

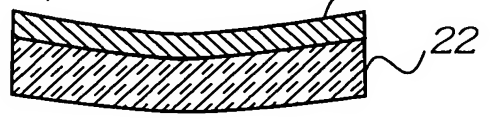


FIG. 5

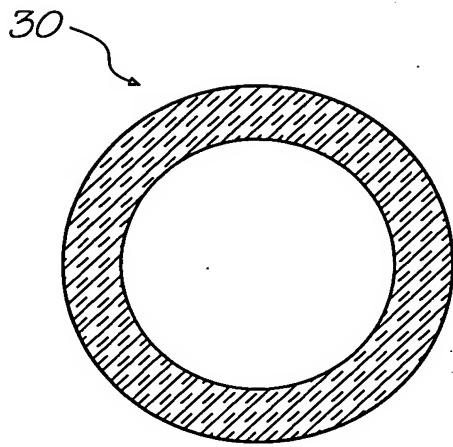


FIG. 6

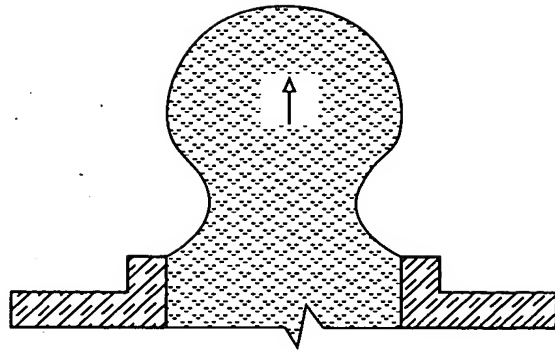


FIG. 7

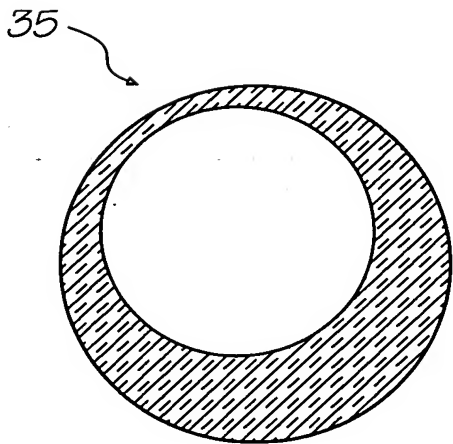


FIG. 8

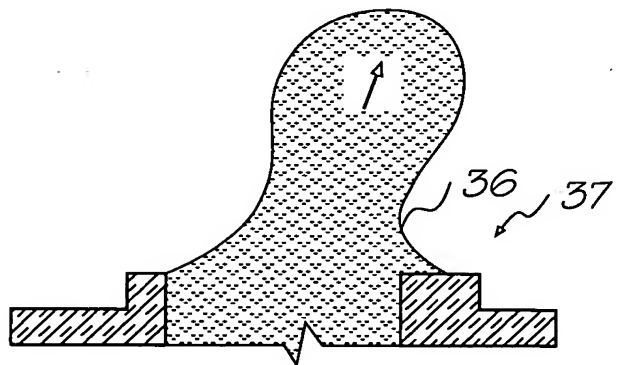


FIG. 9

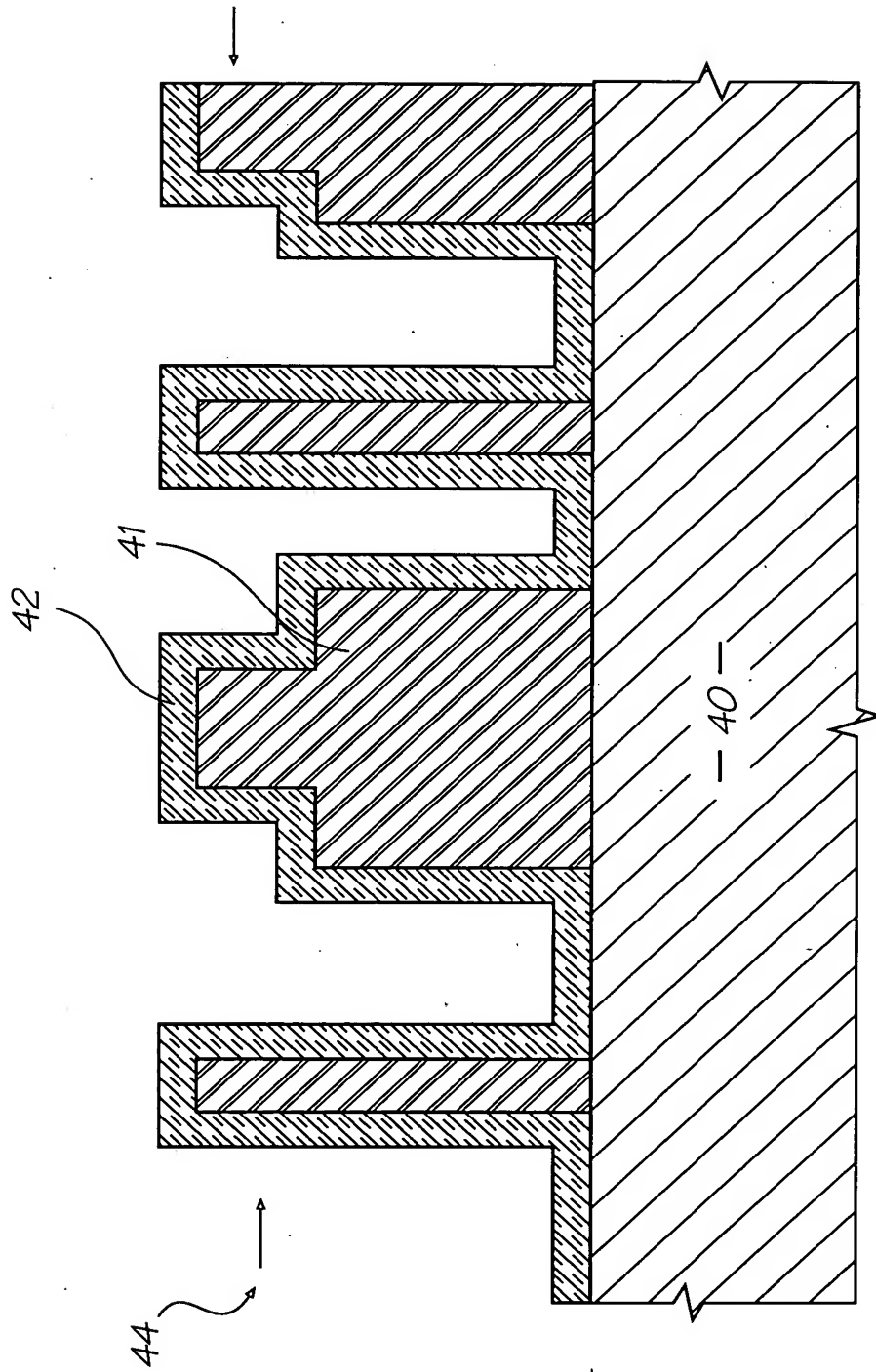


FIG. 10

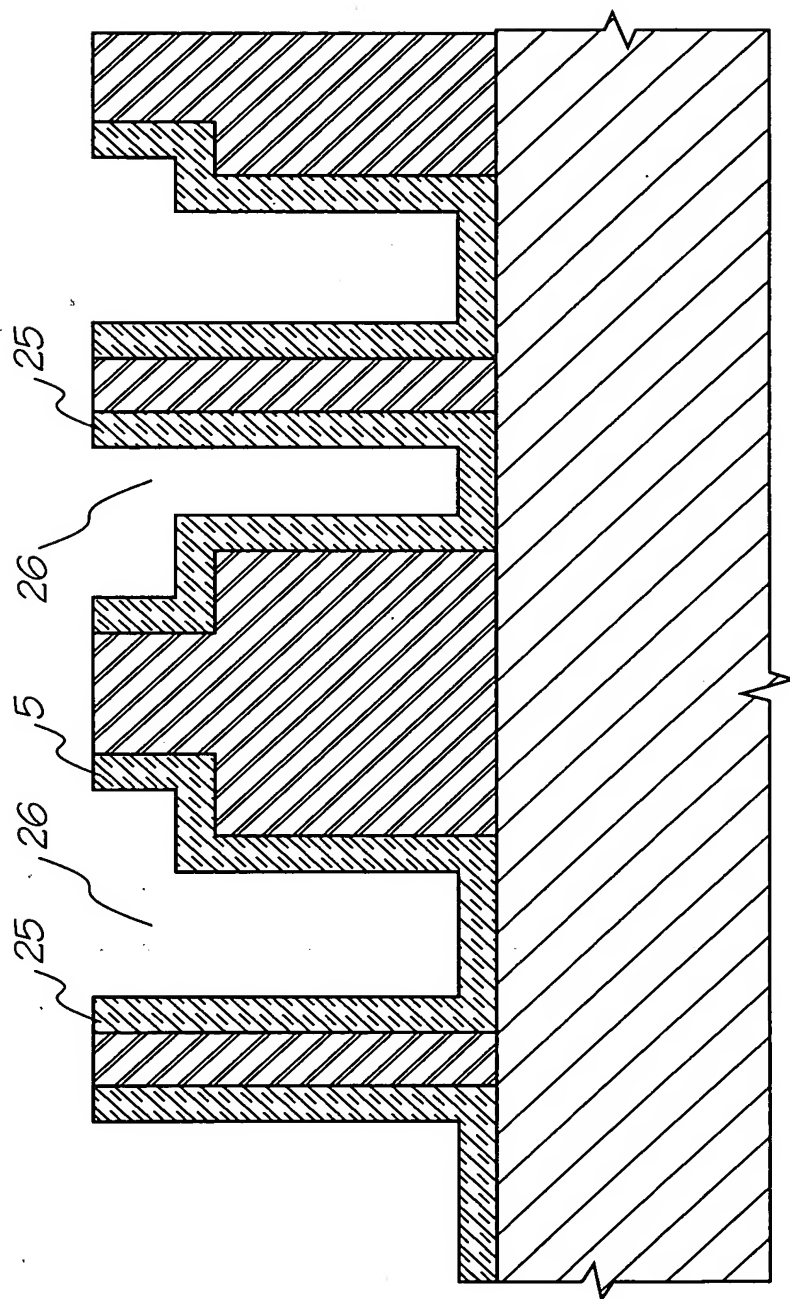


FIG. 11

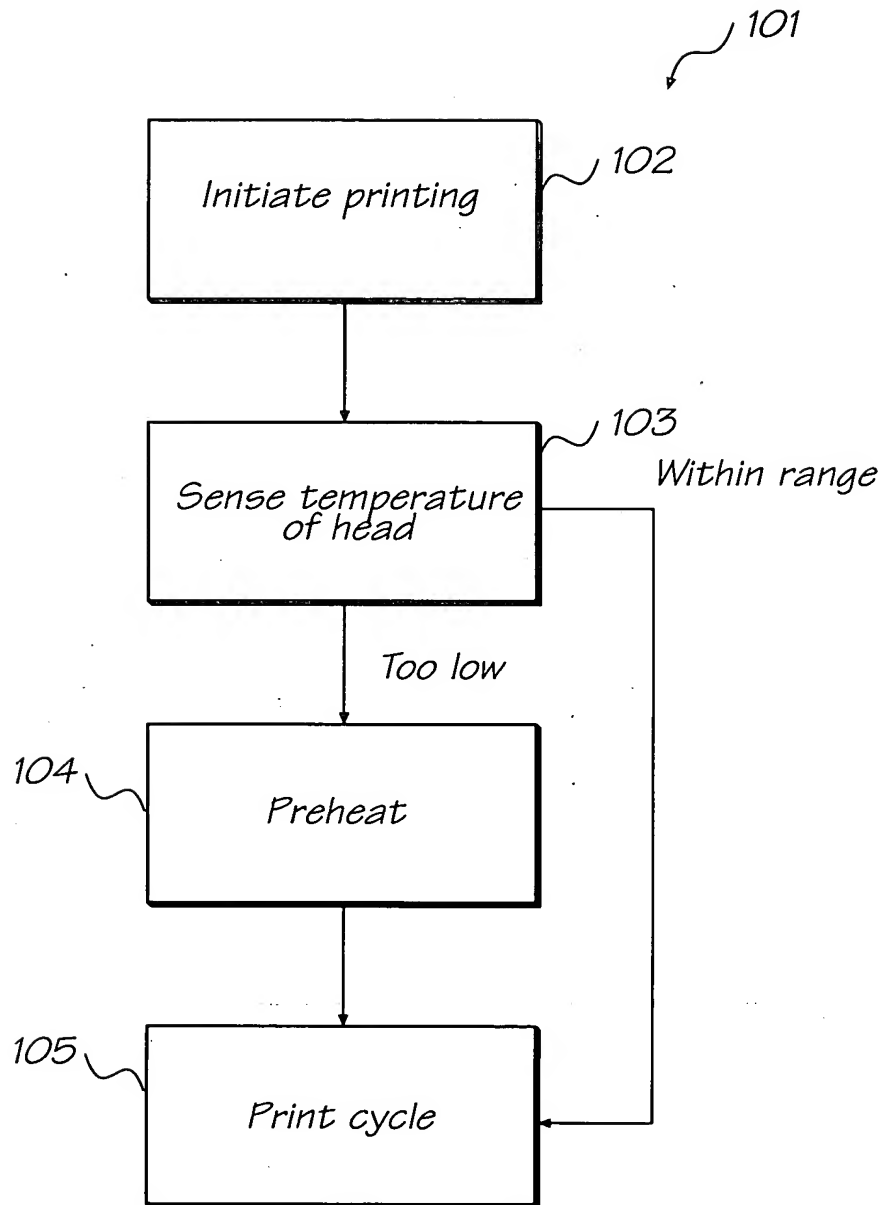


FIG. 12

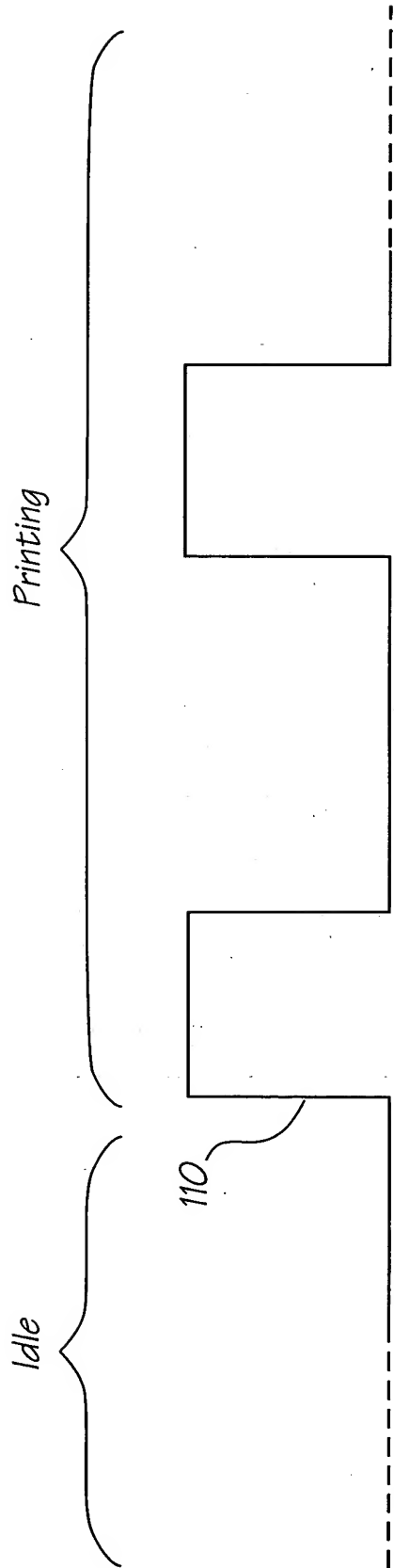


FIG. 13

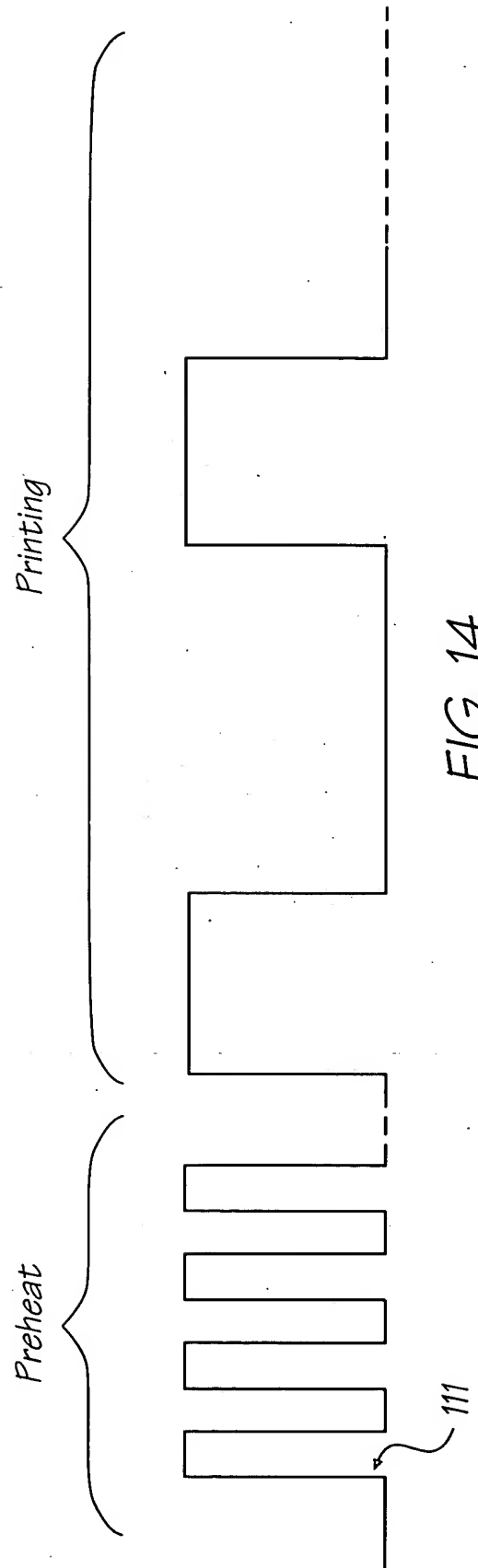


FIG. 14

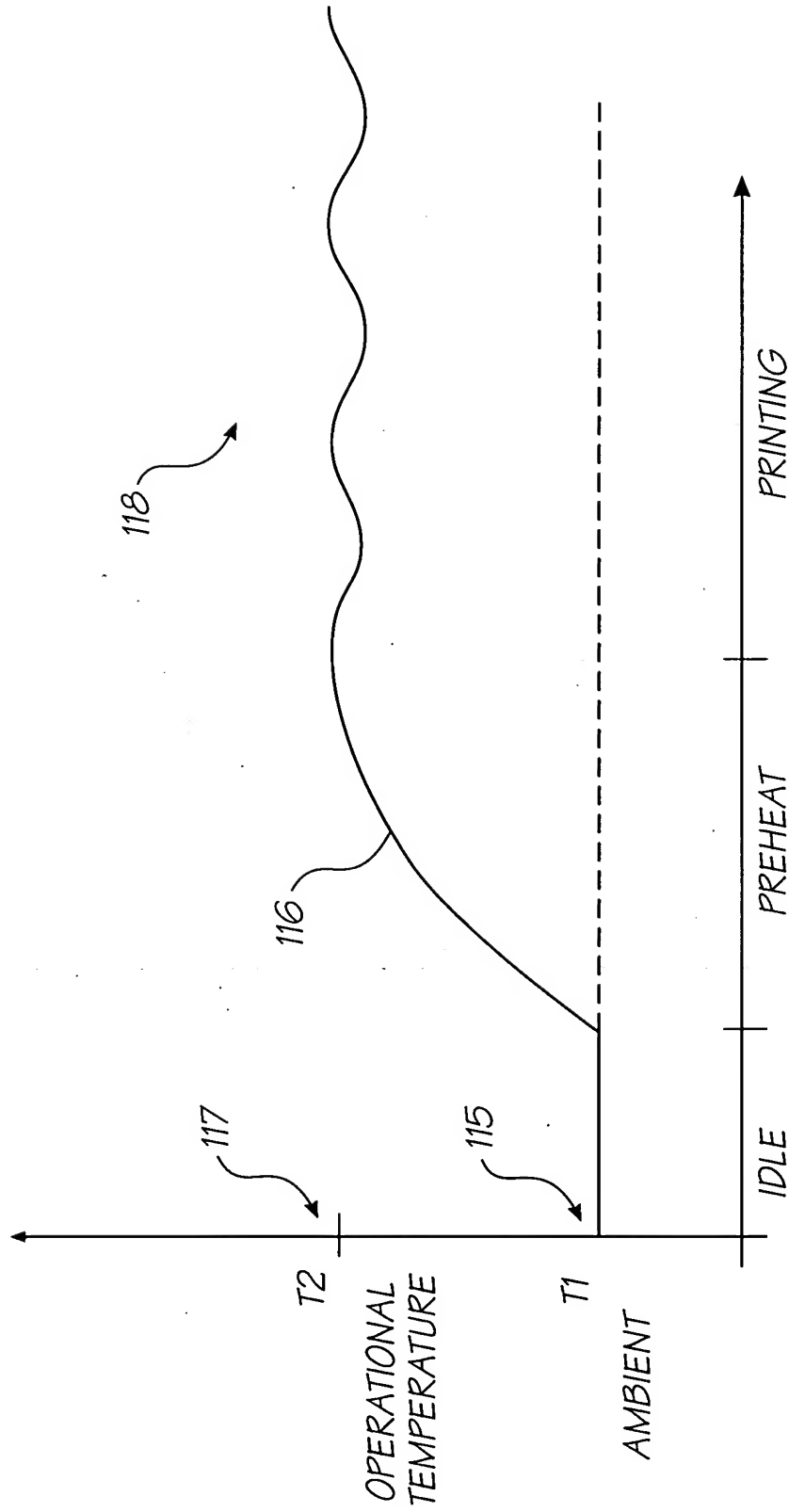


FIG. 15

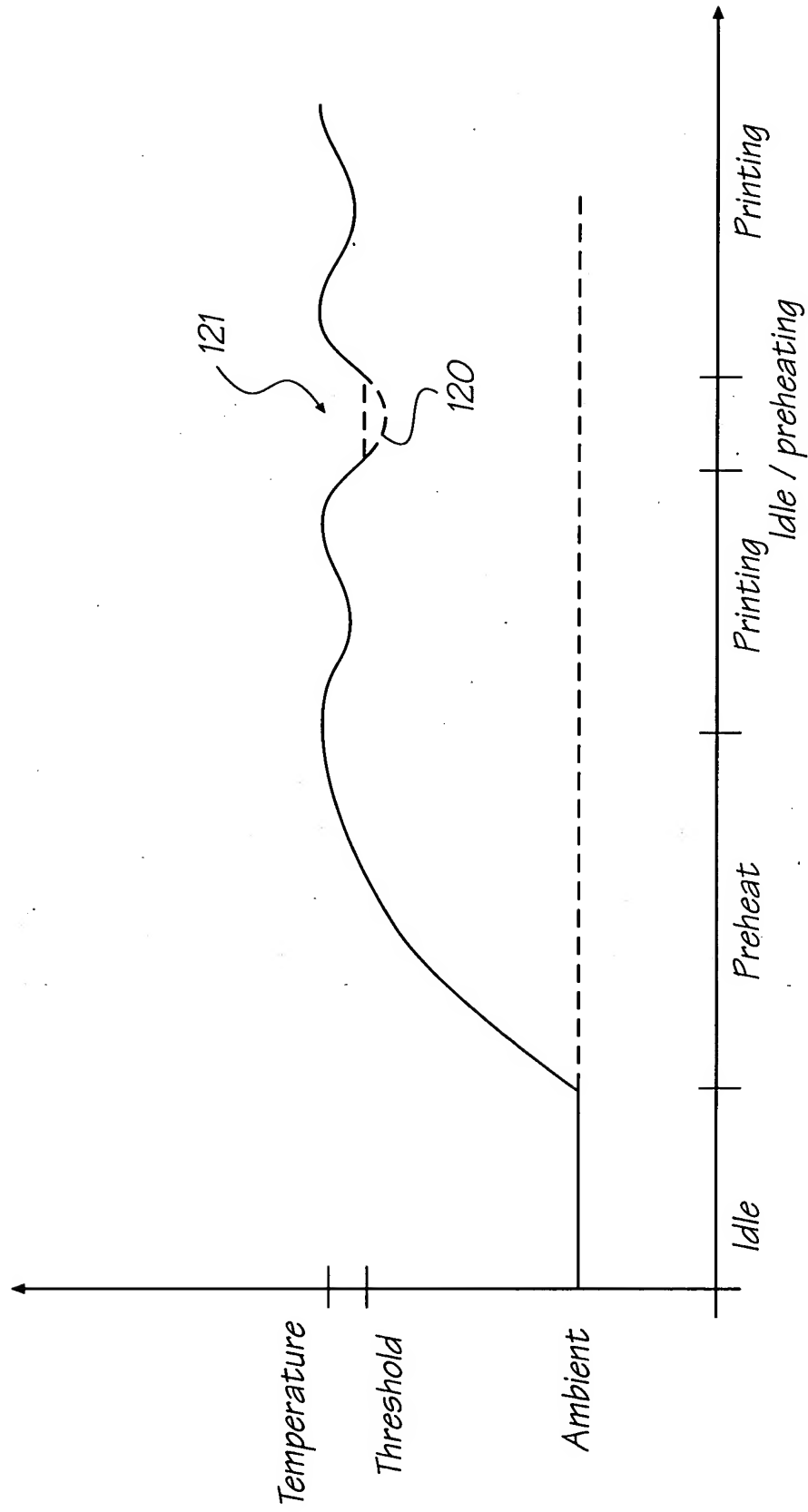


FIG. 16

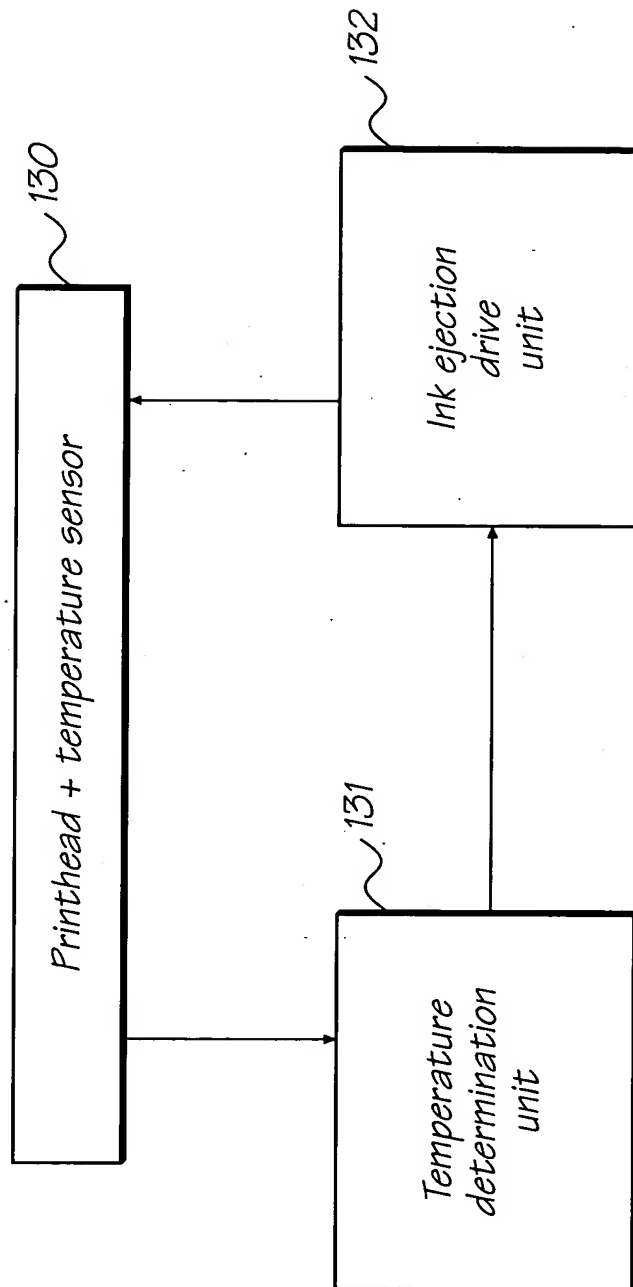


FIG. 17

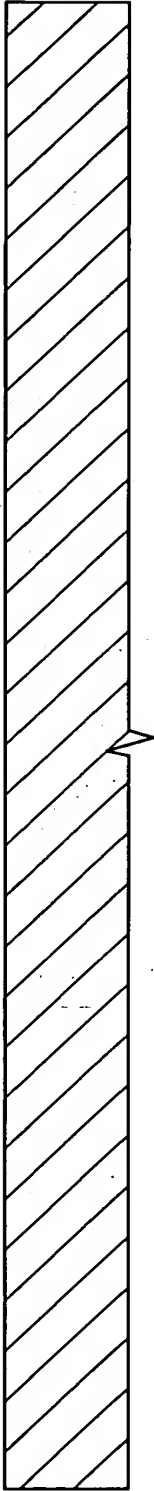
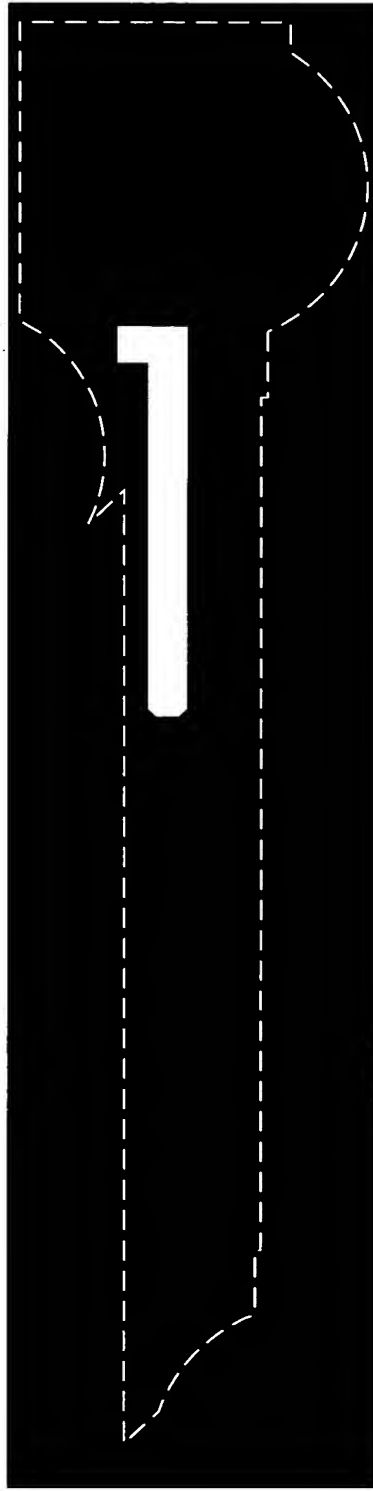
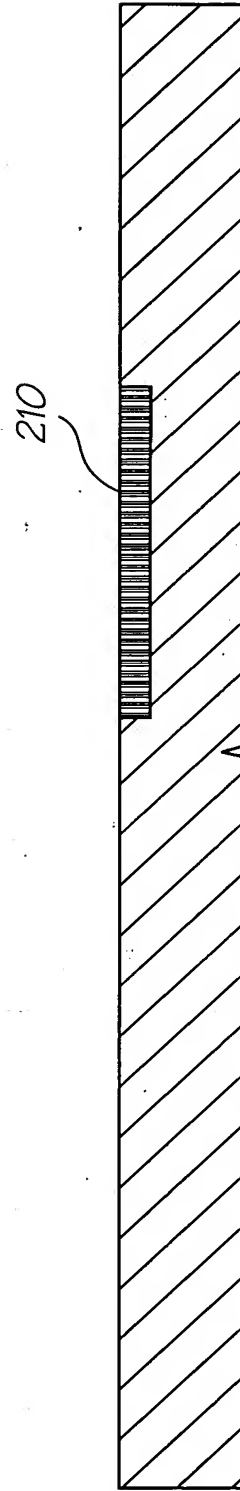


FIG. 18



N-Well mask

FIG. 19



Implant N-Well

FIG. 20

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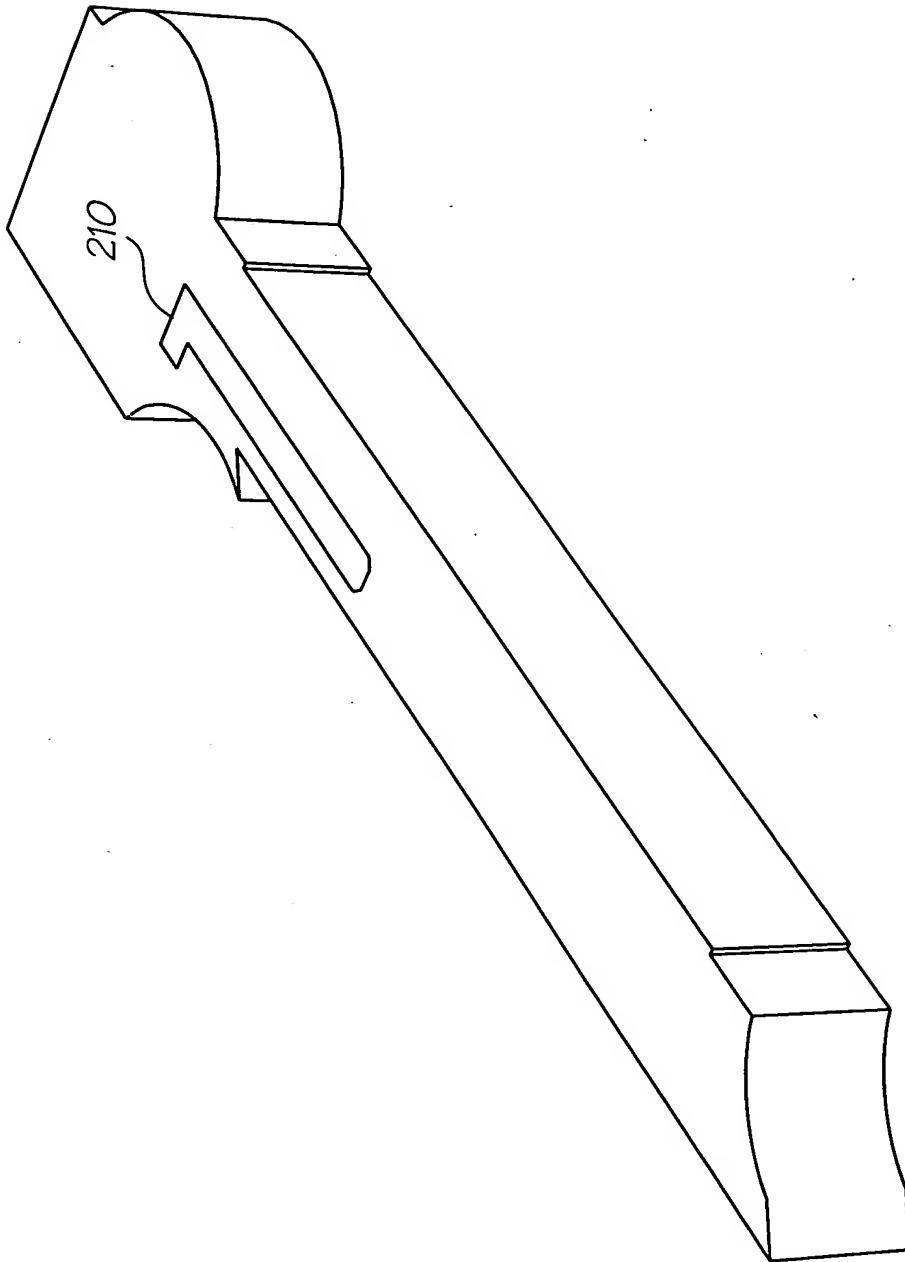
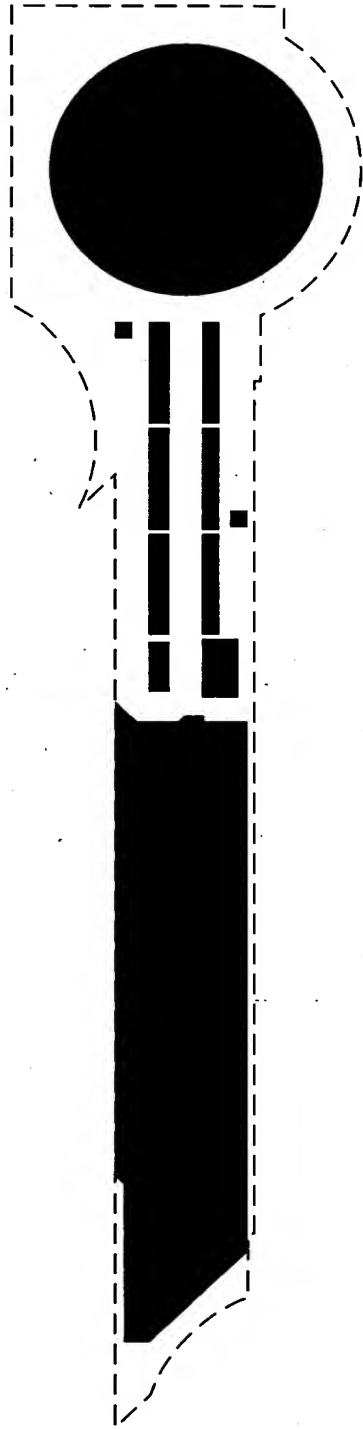
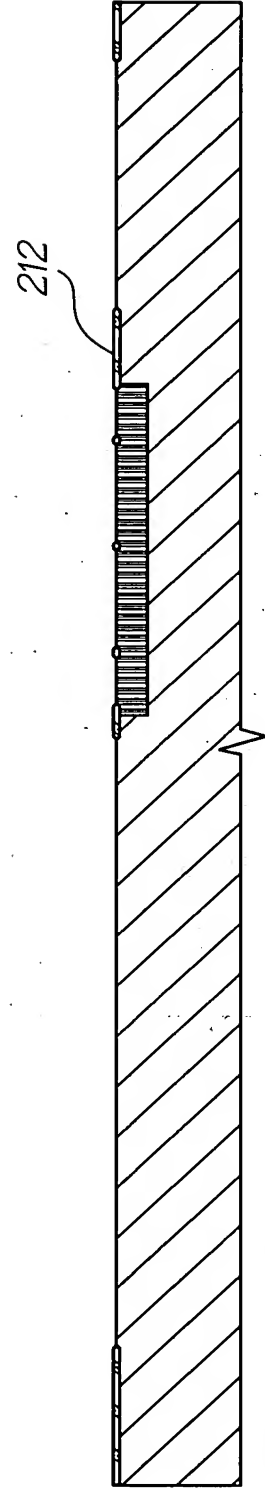


FIG. 21



Active mask

FIG. 22



Grow field oxide

FIG. 23

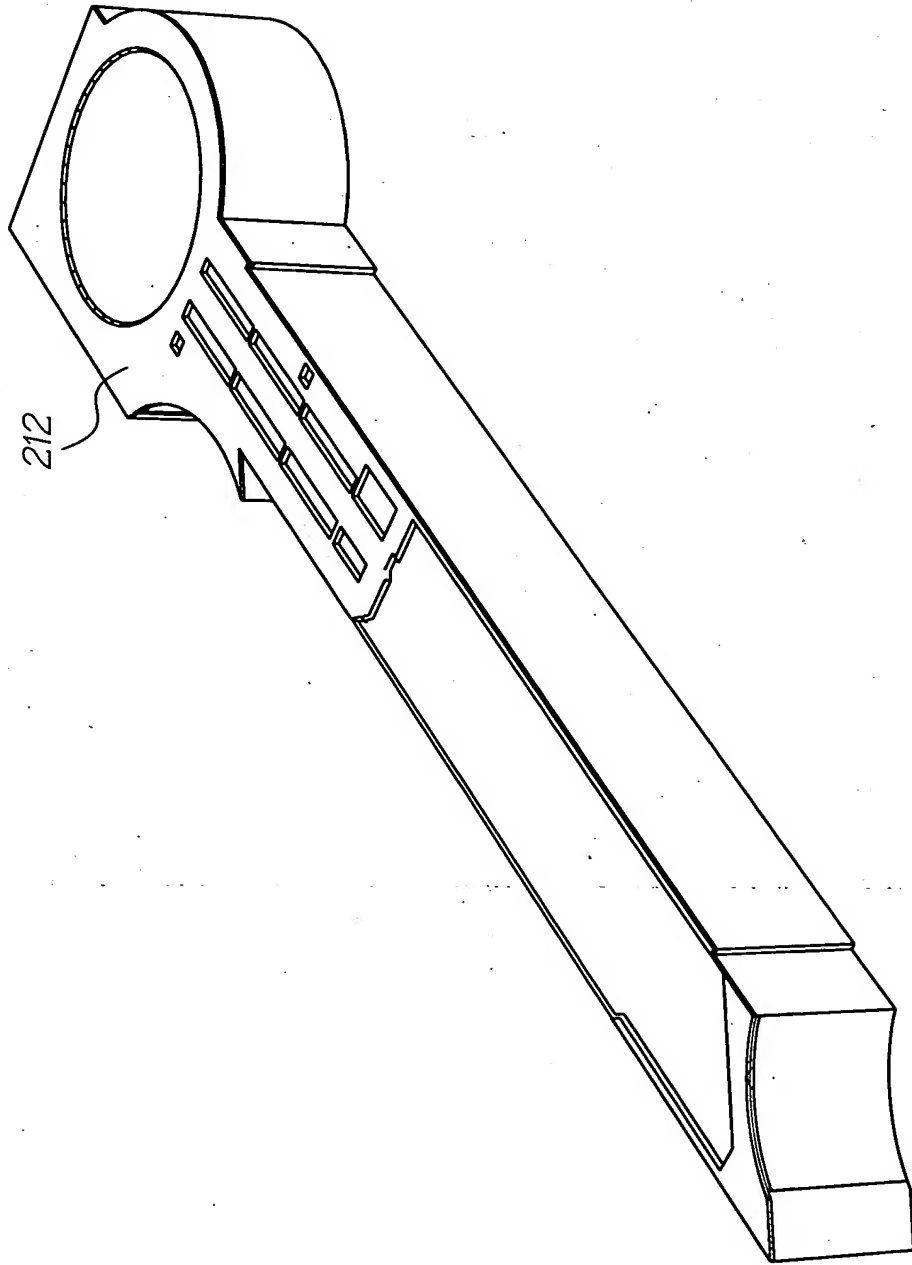
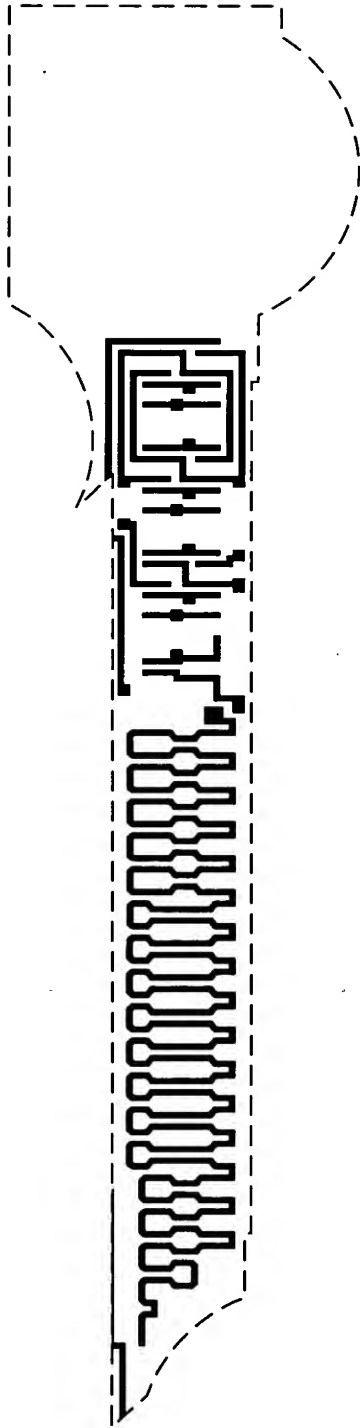
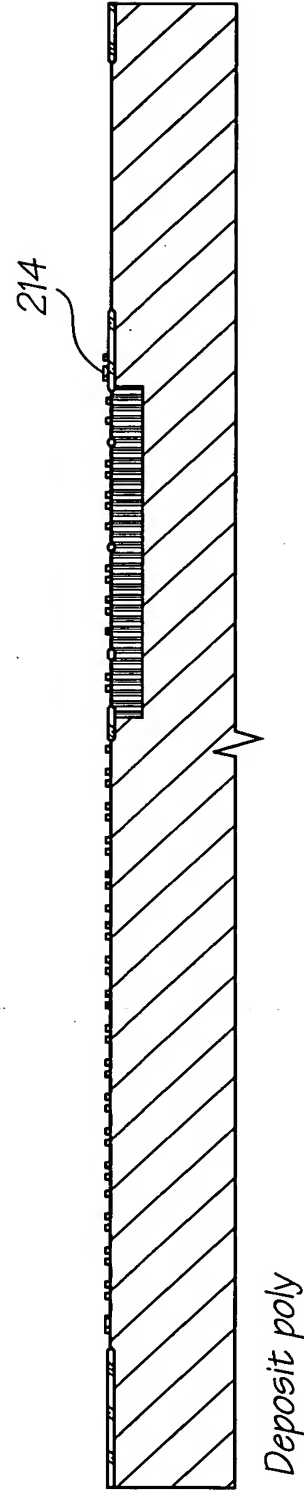


FIG. 24



Poly mask

FIG. 25



Deposit poly

FIG. 26

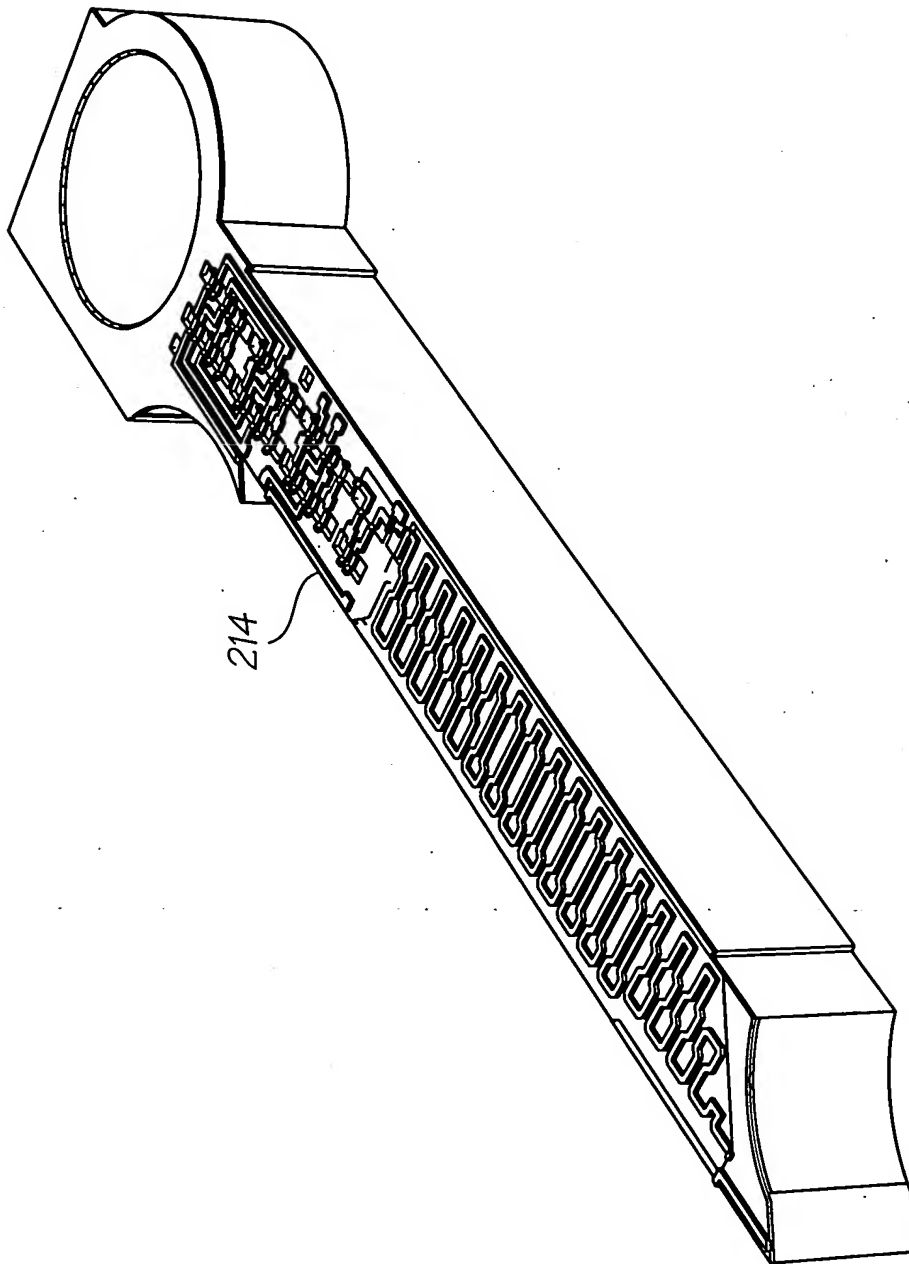
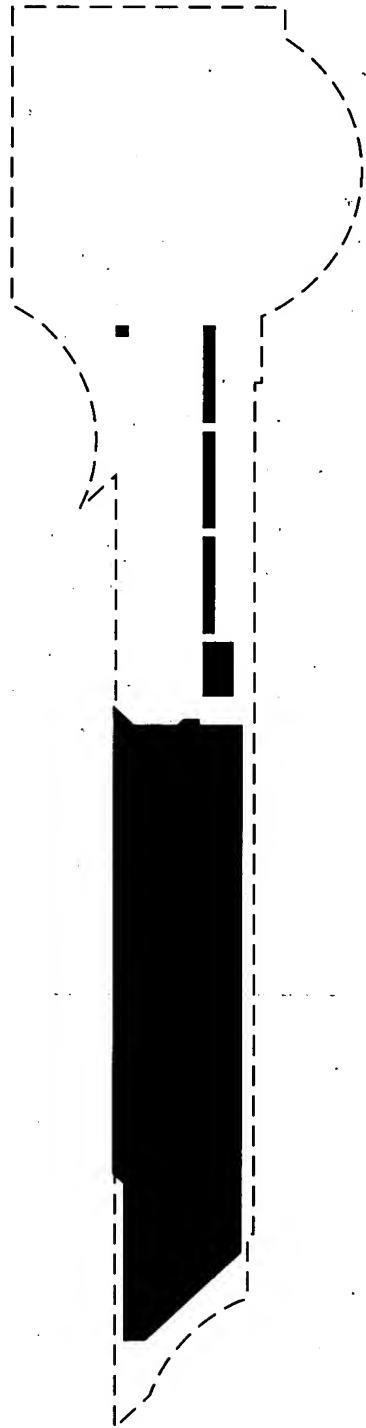
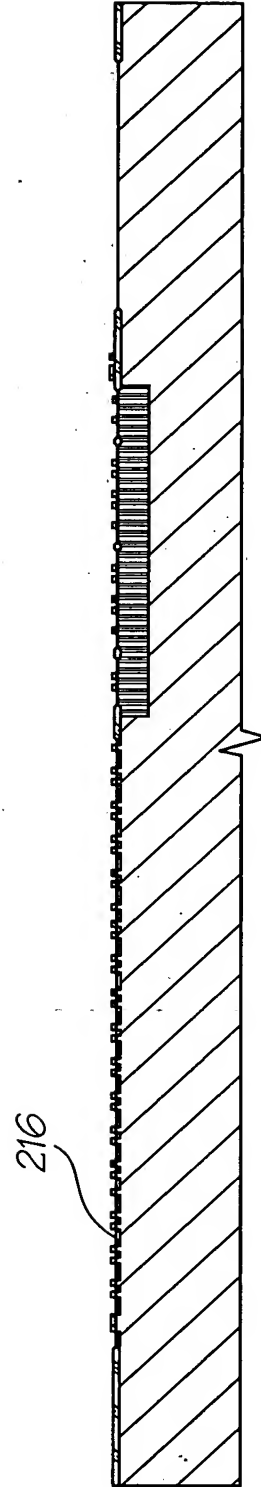


FIG. 27



n+ mask

FIG. 28



n+ implant

FIG. 29

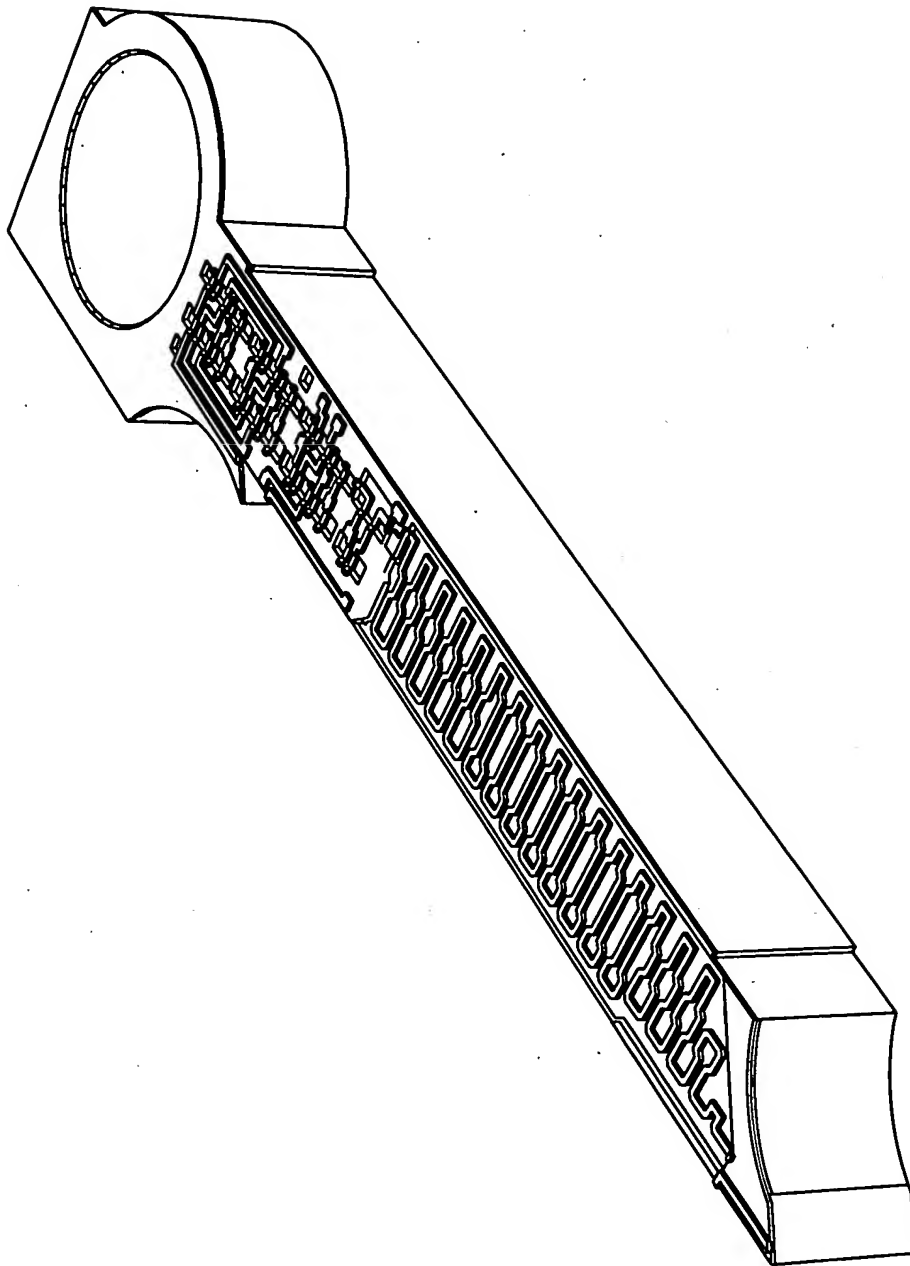


FIG. 30

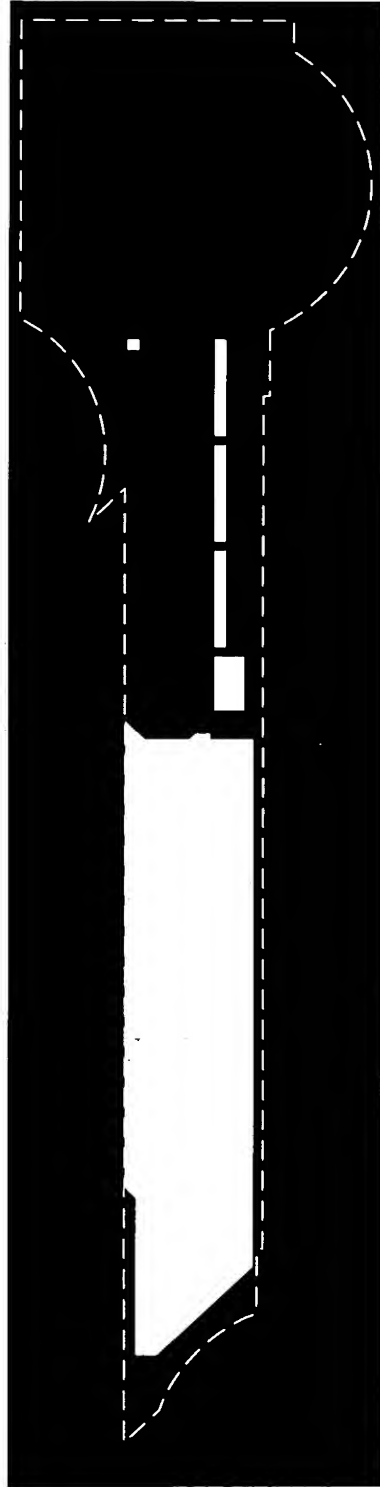
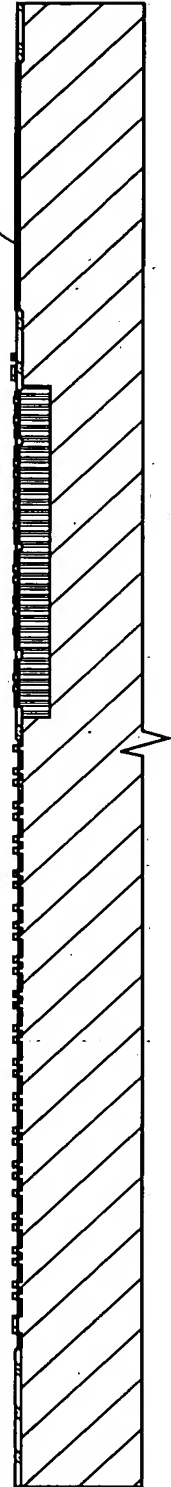


FIG. 31



p+ implant

FIG. 32

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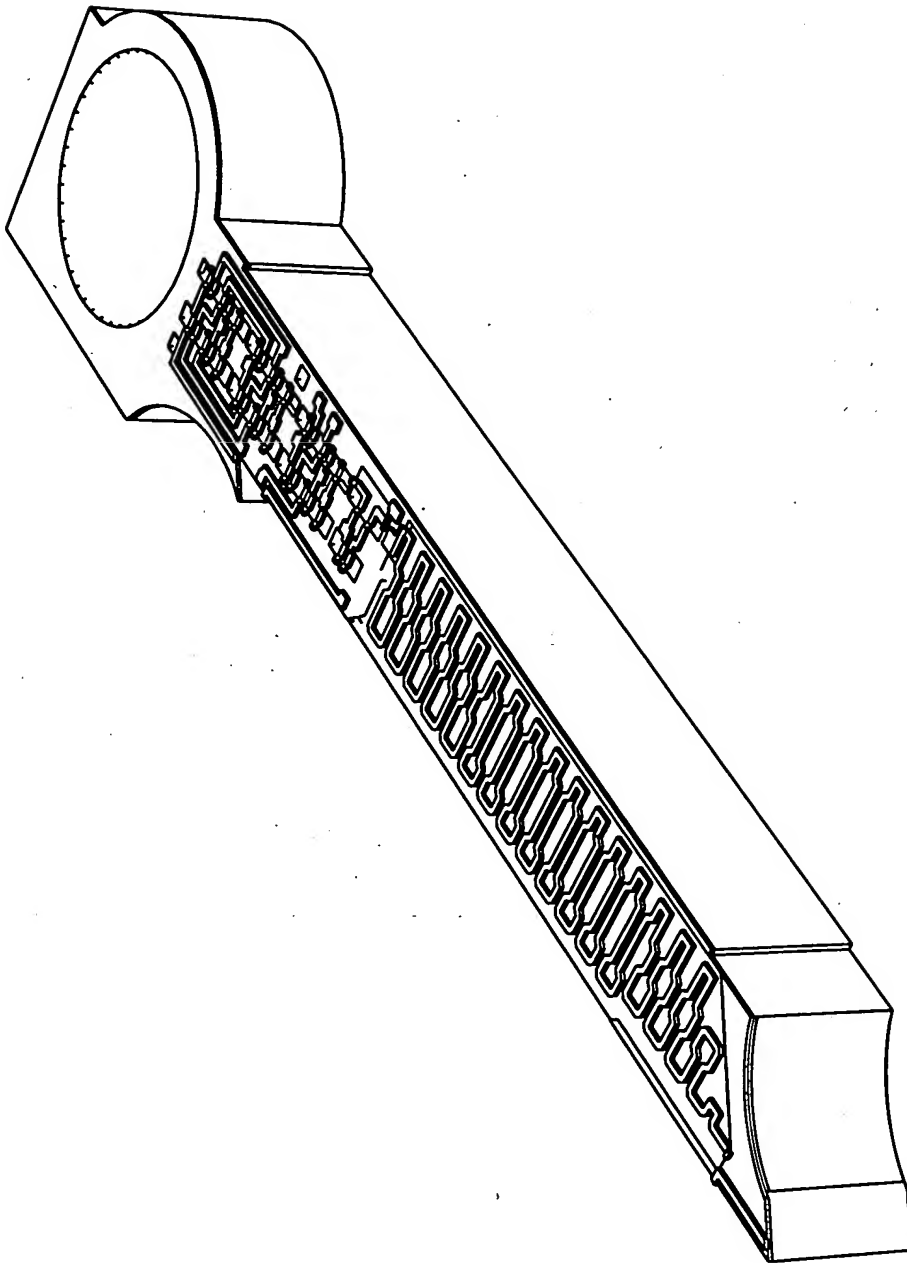
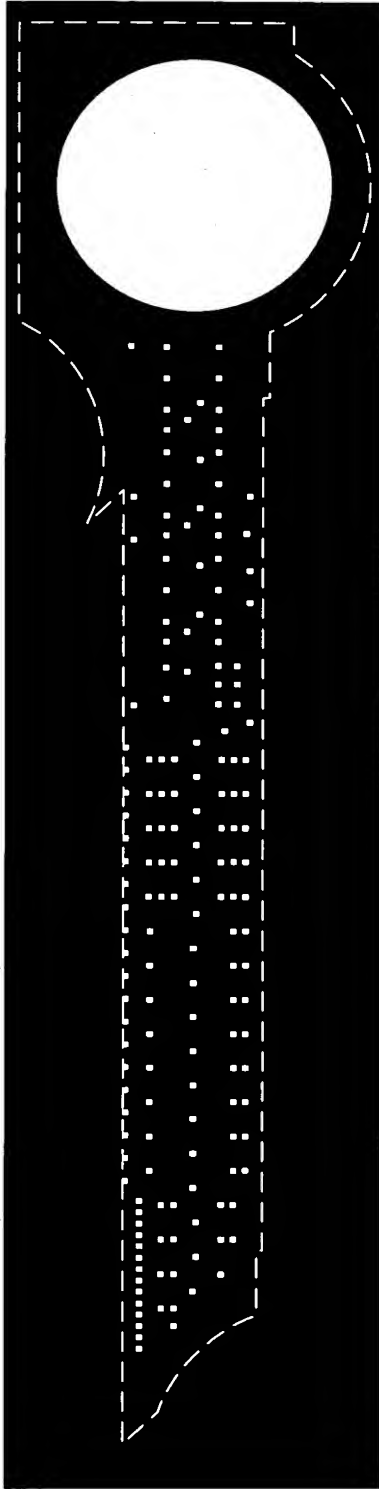
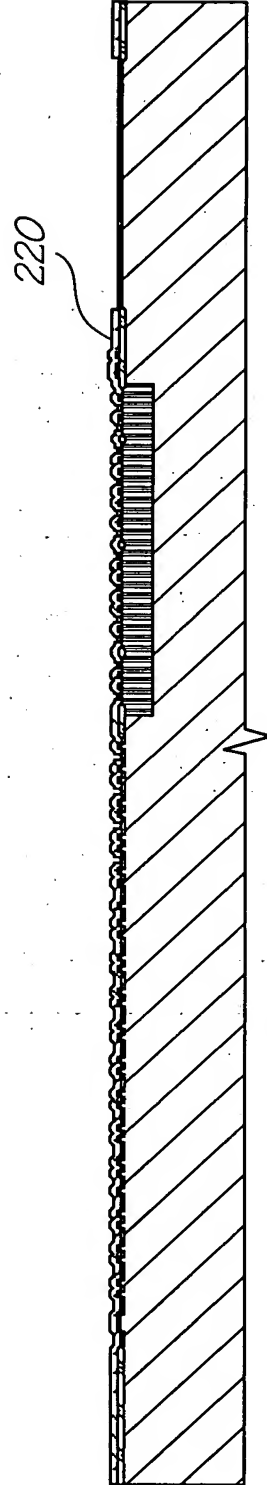


FIG. 33



Contacts mask

FIG. 34



Deposit ILD 1, etch contacts

FIG. 35

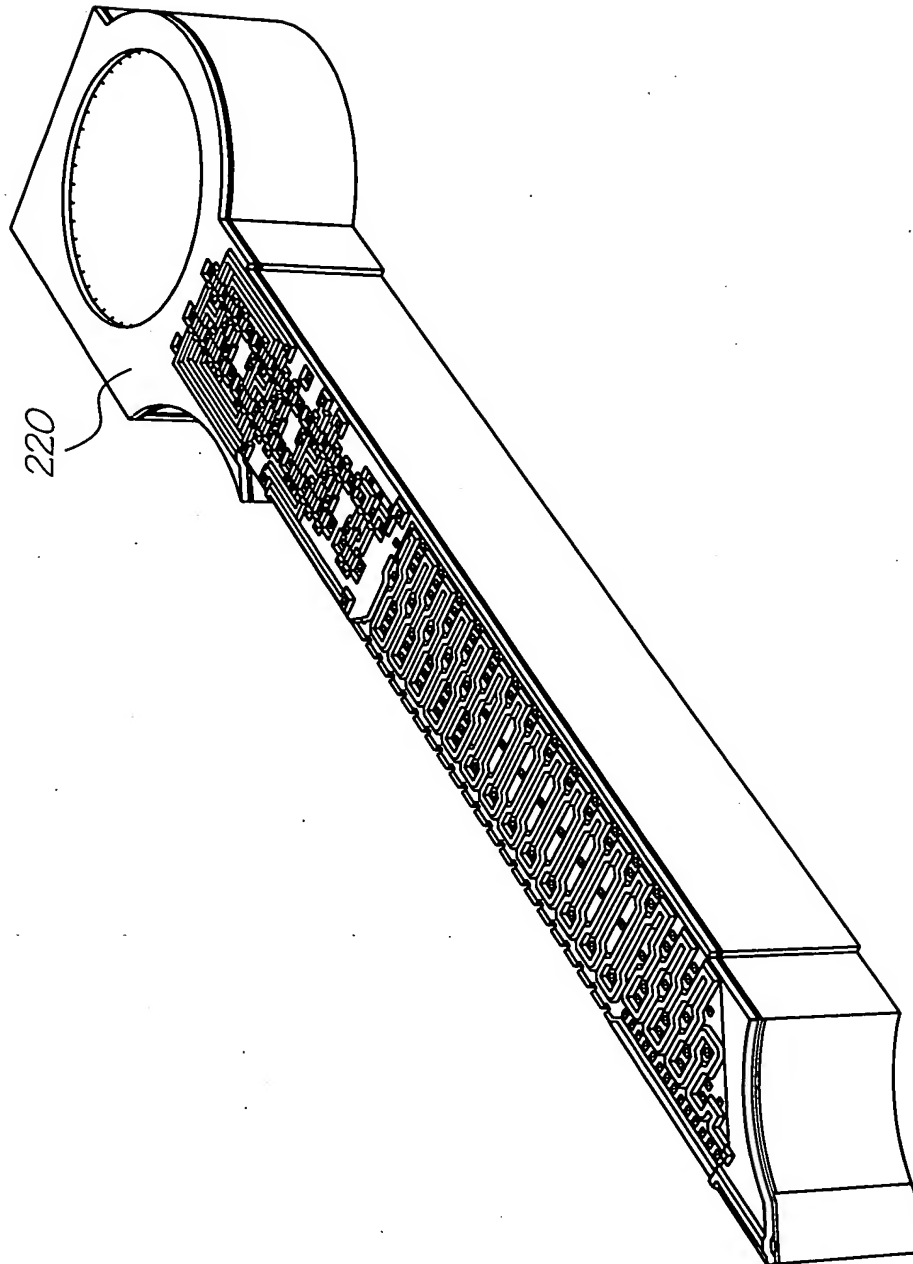
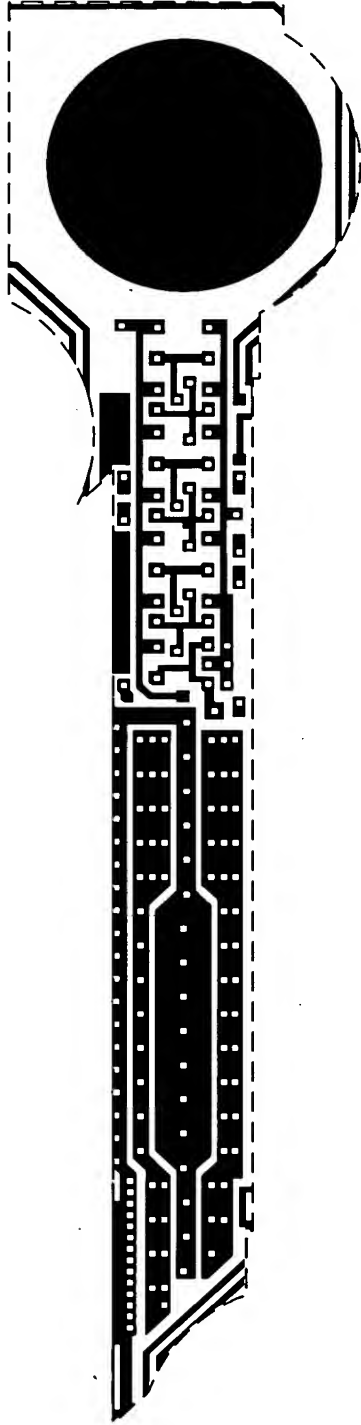
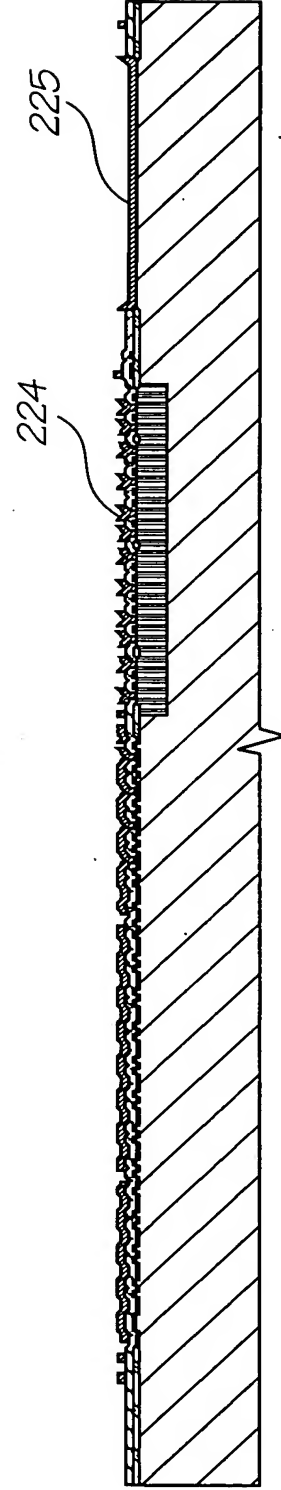


FIG. 36



Metal 1 mask

FIG. 37



Deposit Metal 1

FIG. 38

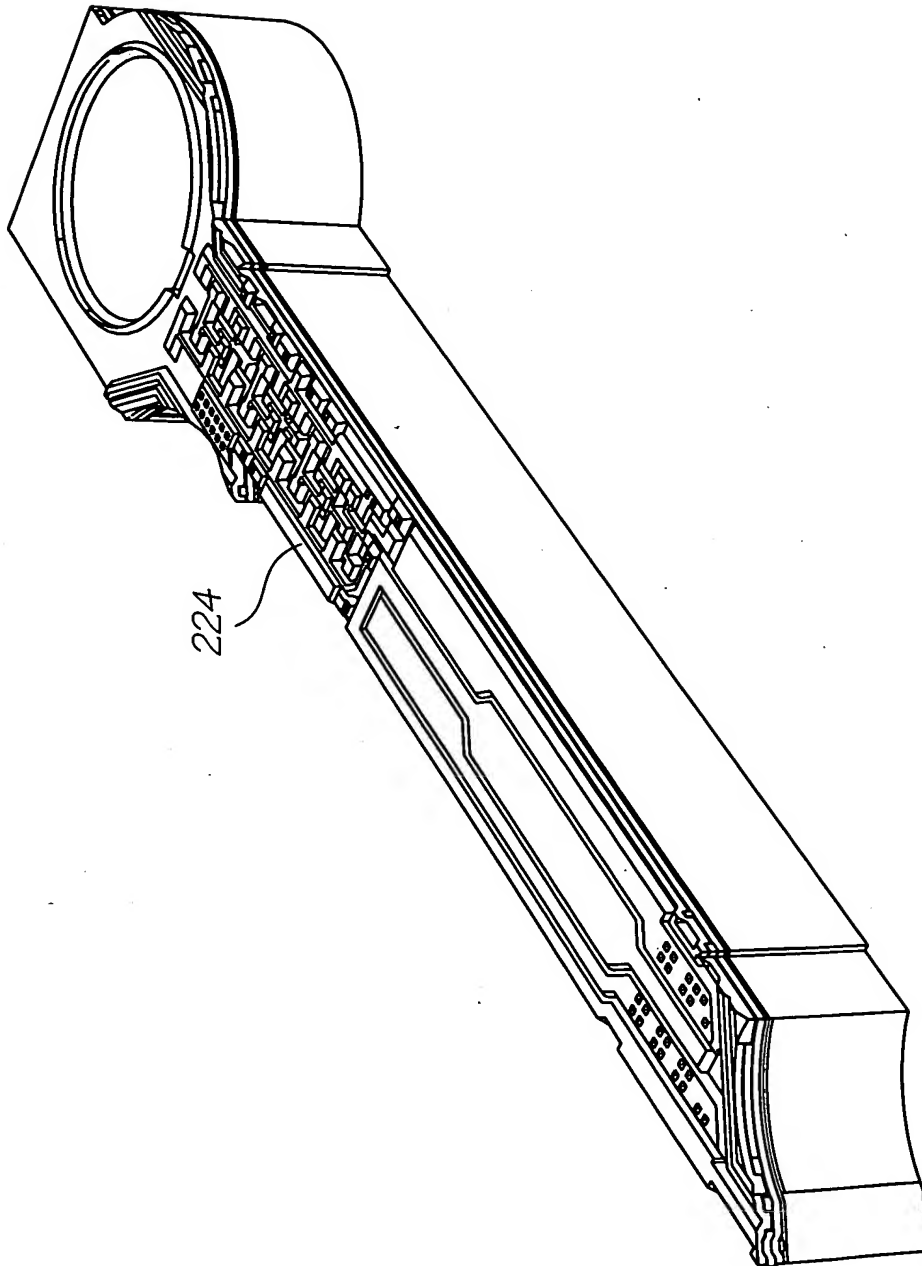
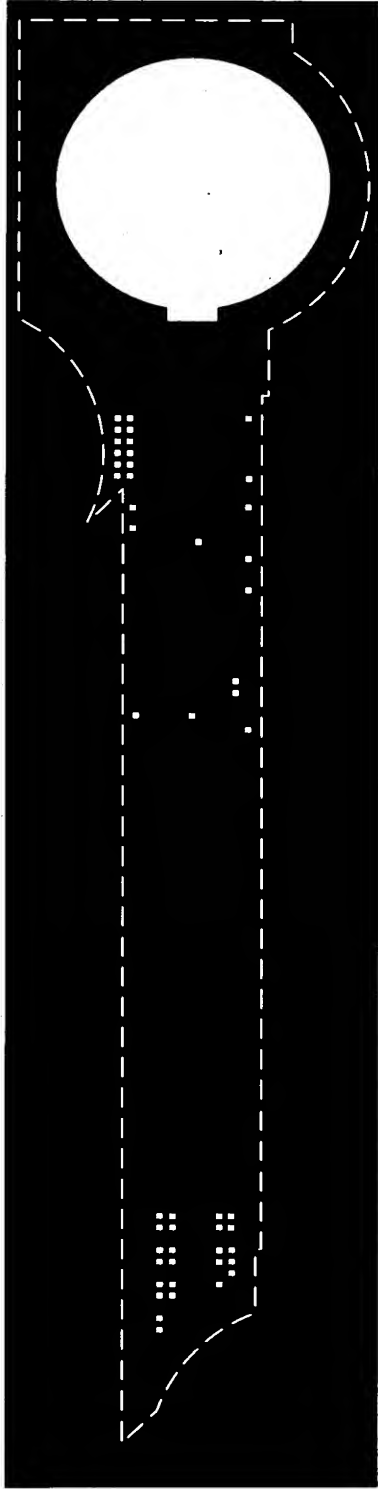
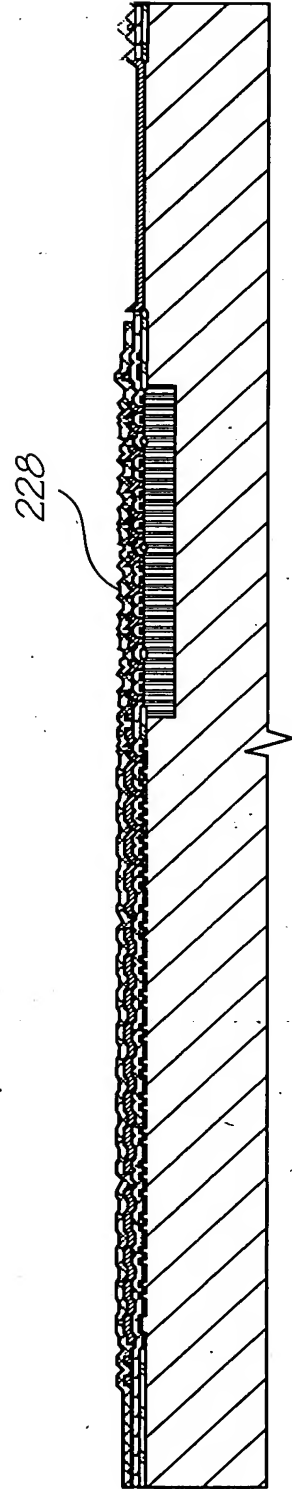


FIG. 39



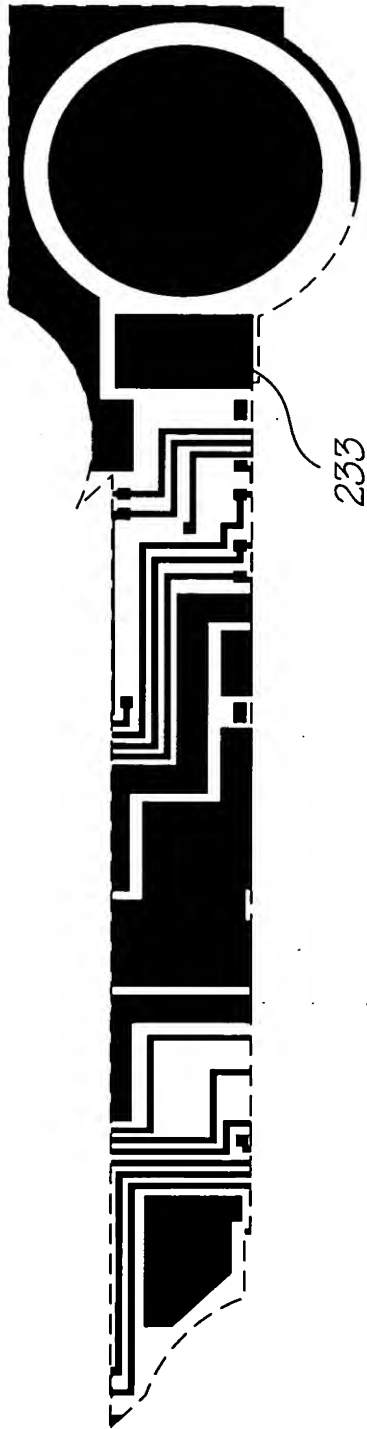
Via 1 mask

FIG. 40



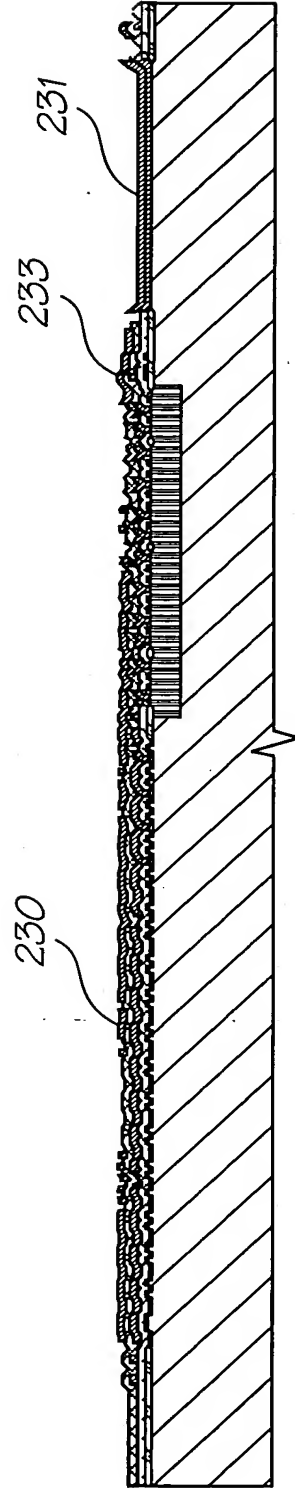
Deposit ILD 2, etch vias

FIG. 41



Metal 2 mask

FIG. 42



Deposit metal 2

FIG. 43

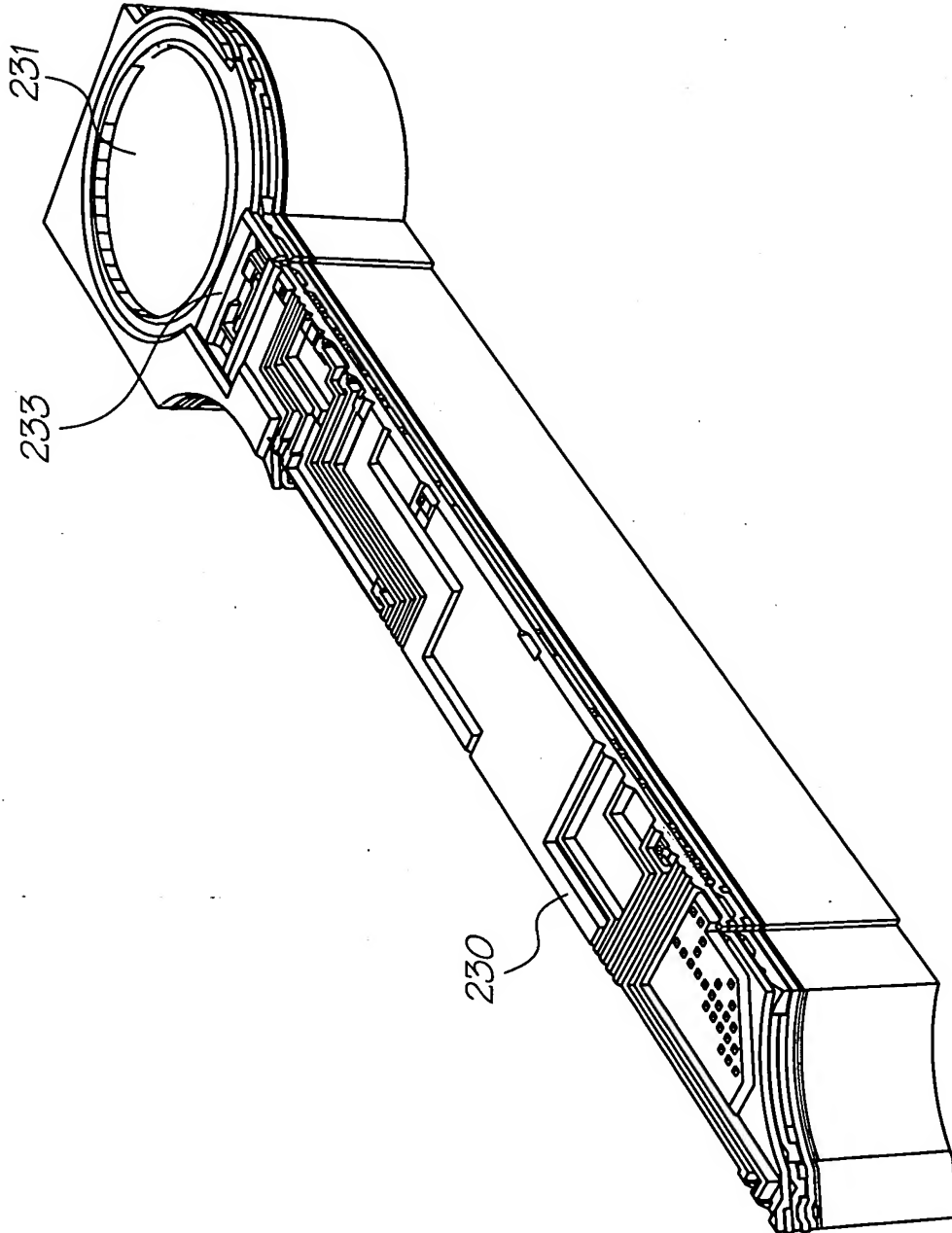
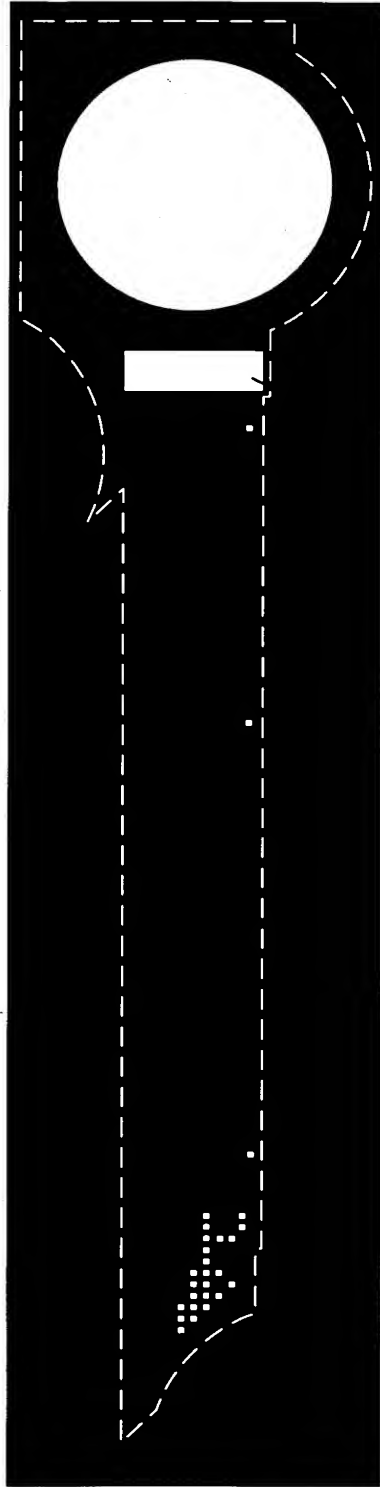
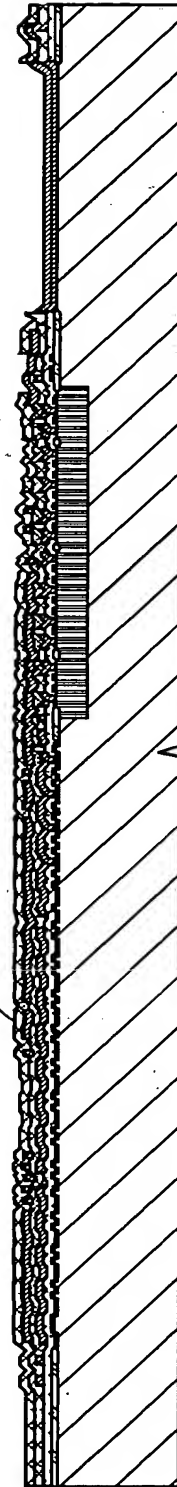


FIG. 44



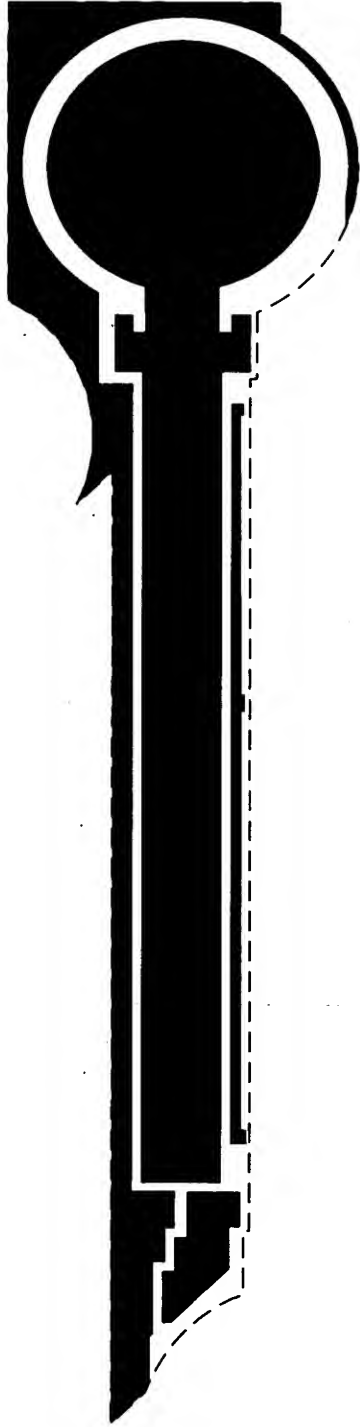
Via 2 mask

FIG. 45



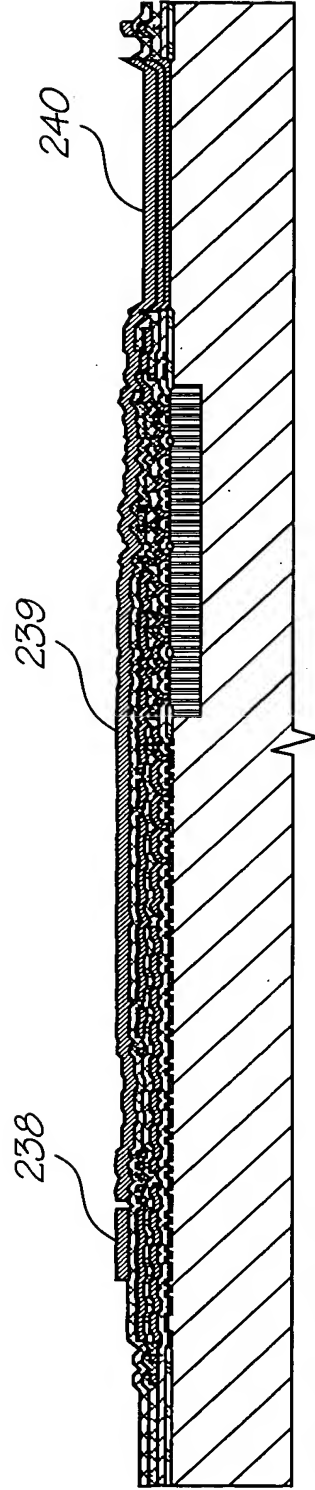
Deposit ILD 3, etch vias

FIG. 46



Metal 3 mask

FIG. 47



Deposit metal 3

FIG. 48

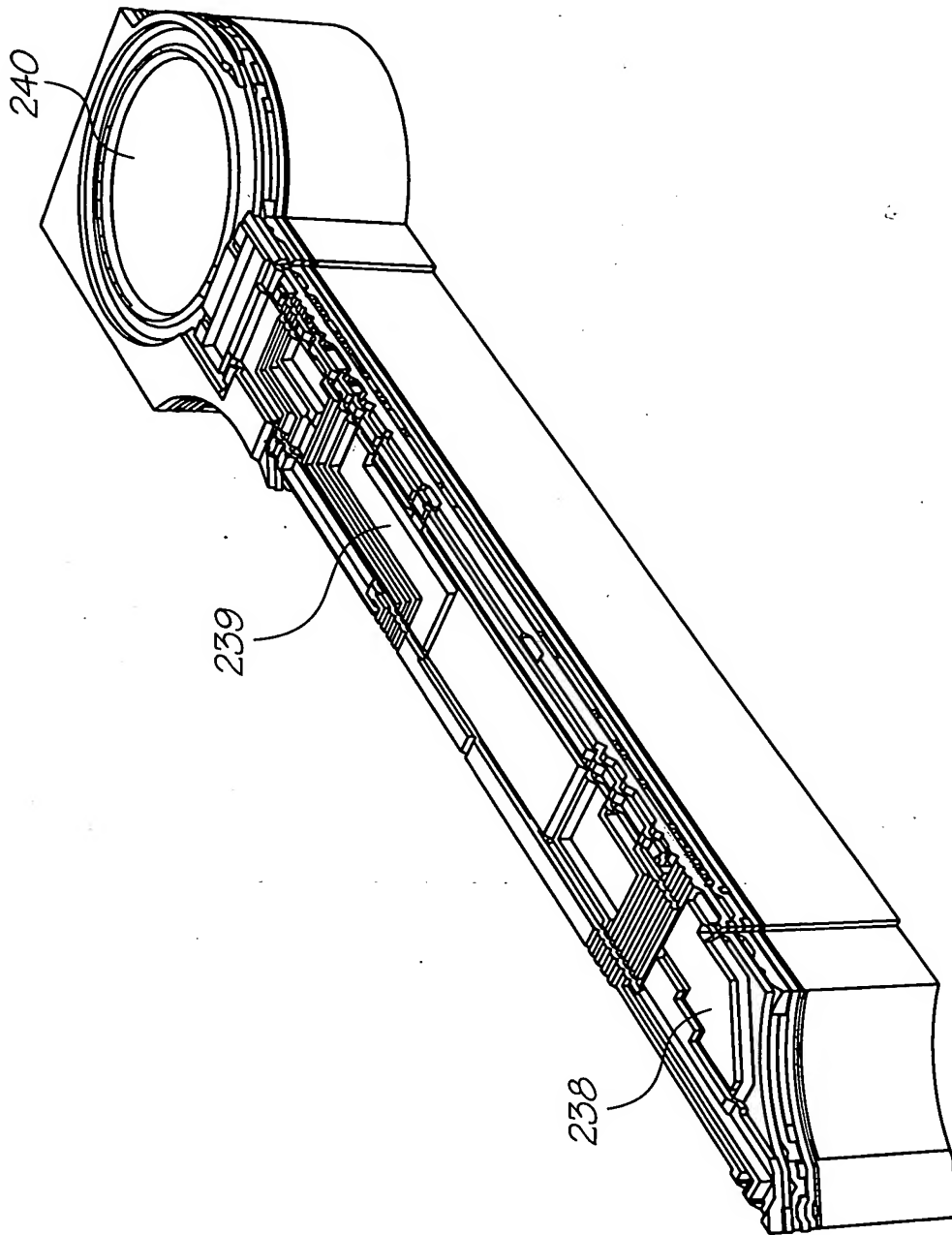
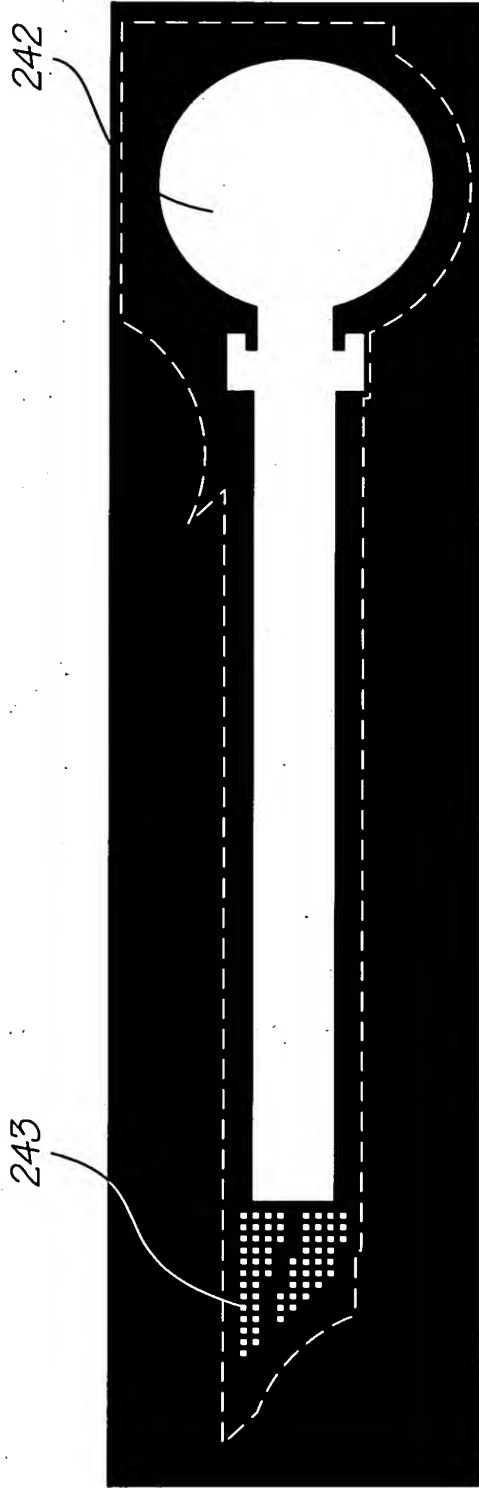


FIG. 49



Via 3 / Passivation mask

FIG. 50

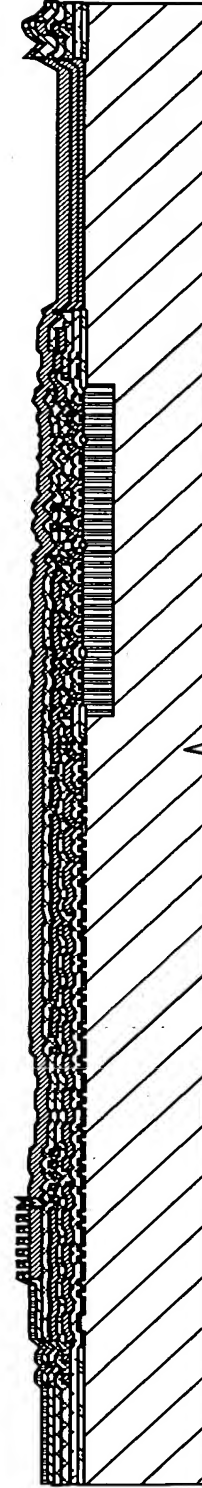


FIG. 51

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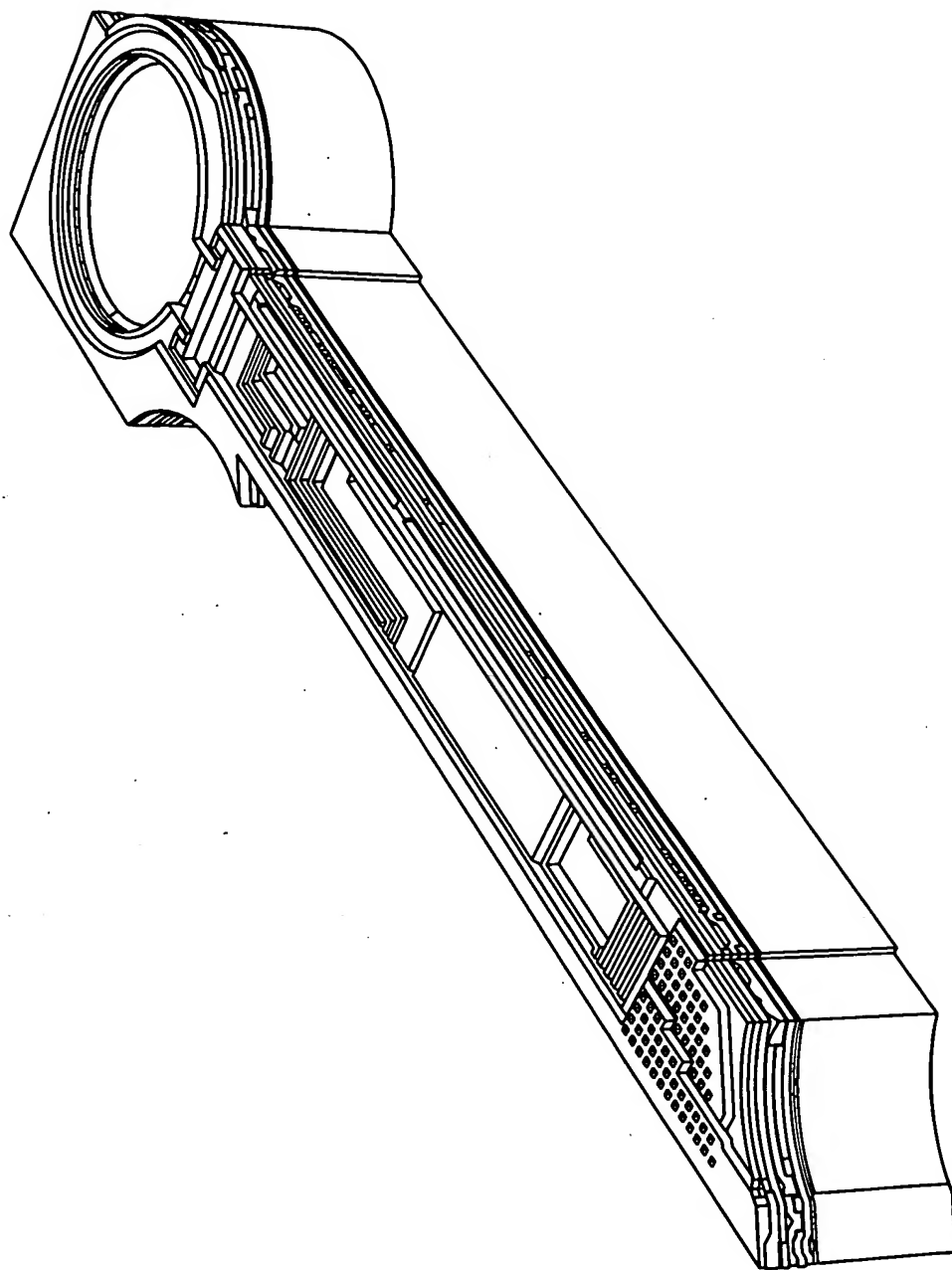
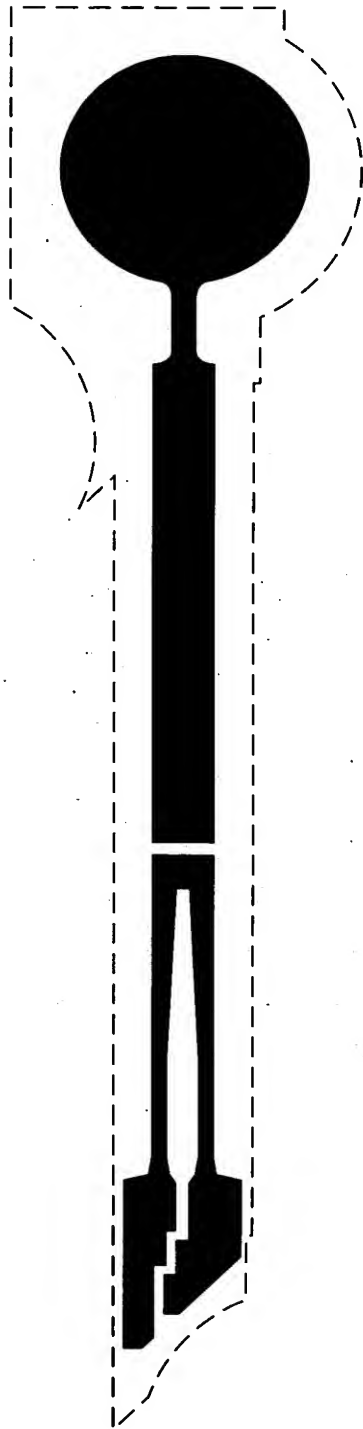
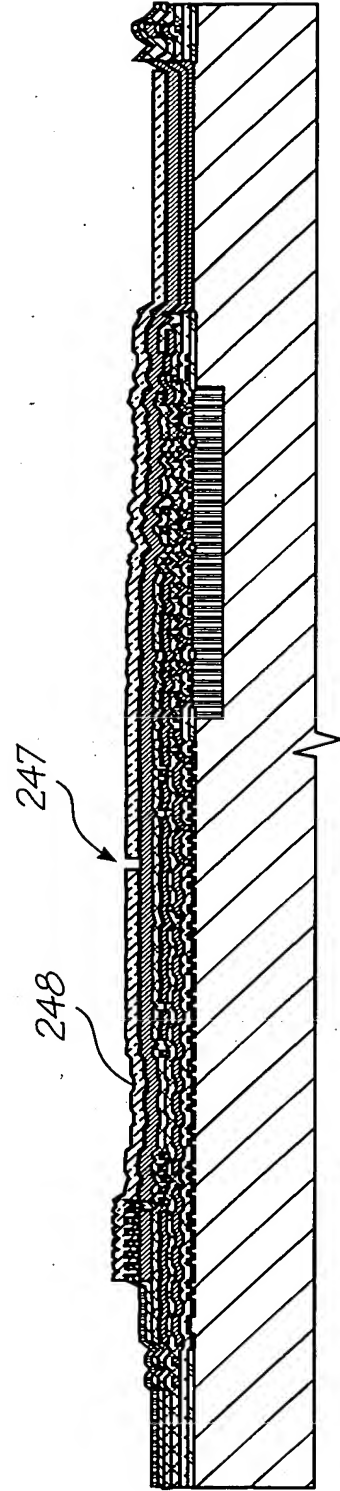


FIG. 52



Heater mask

FIG. 53



Deposit heater TiN

FIG. 54

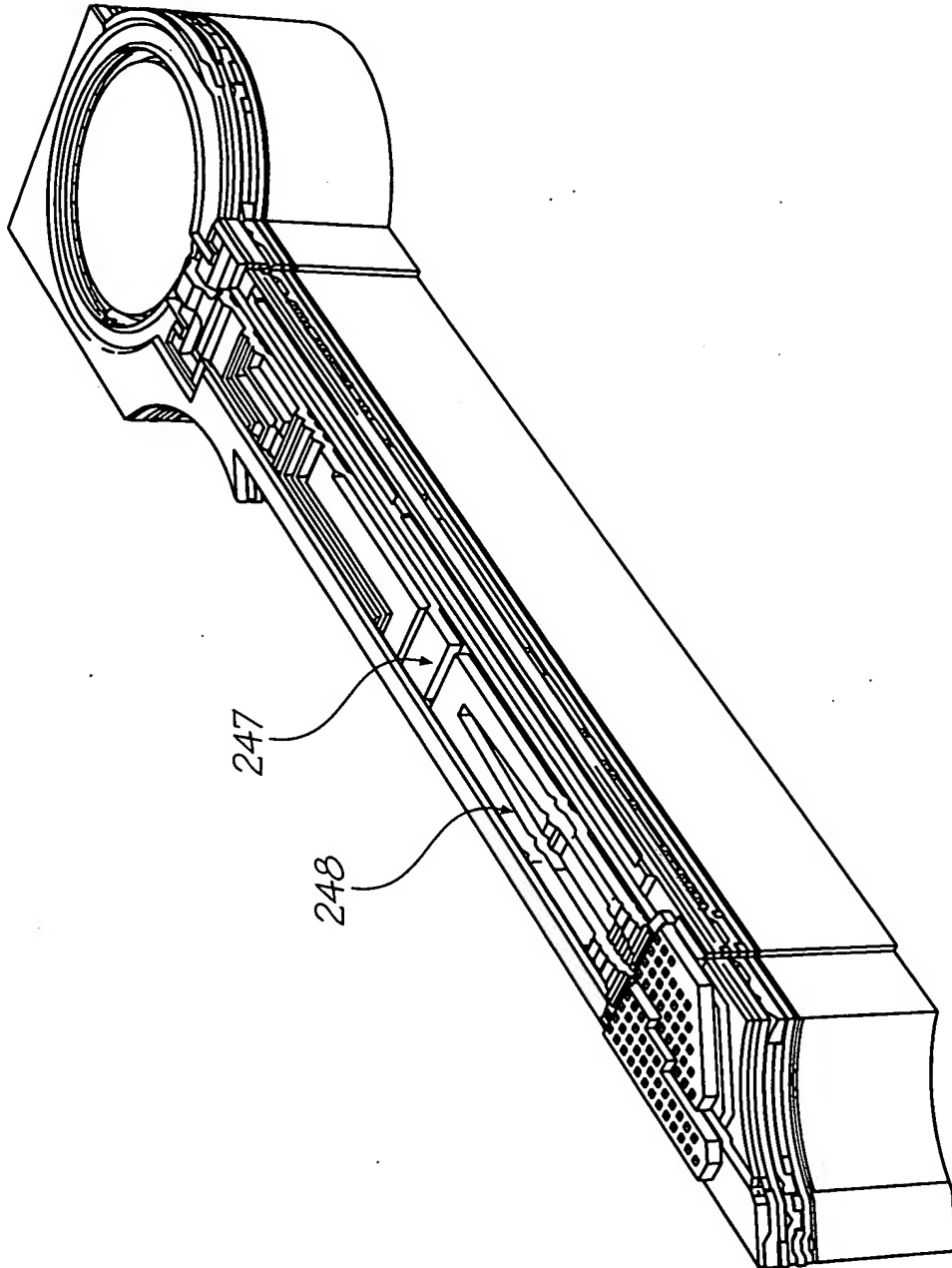
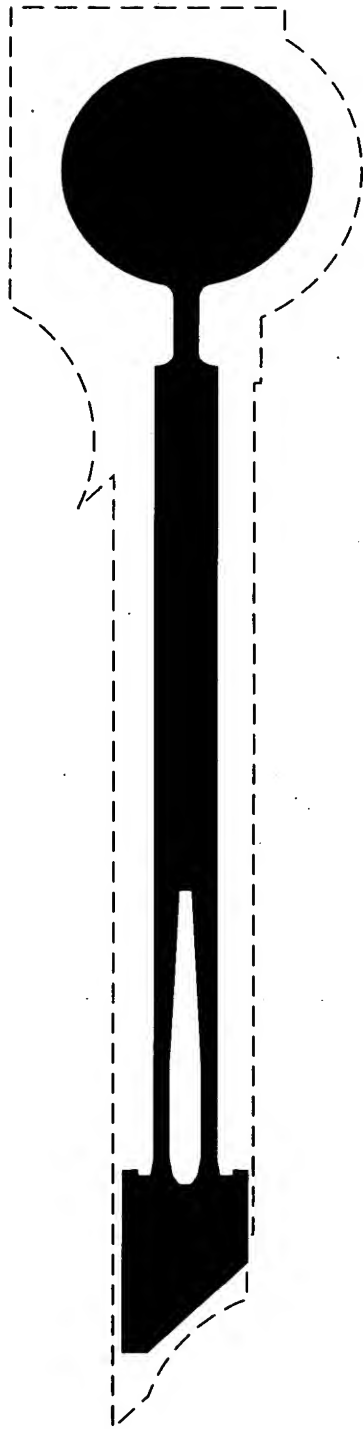
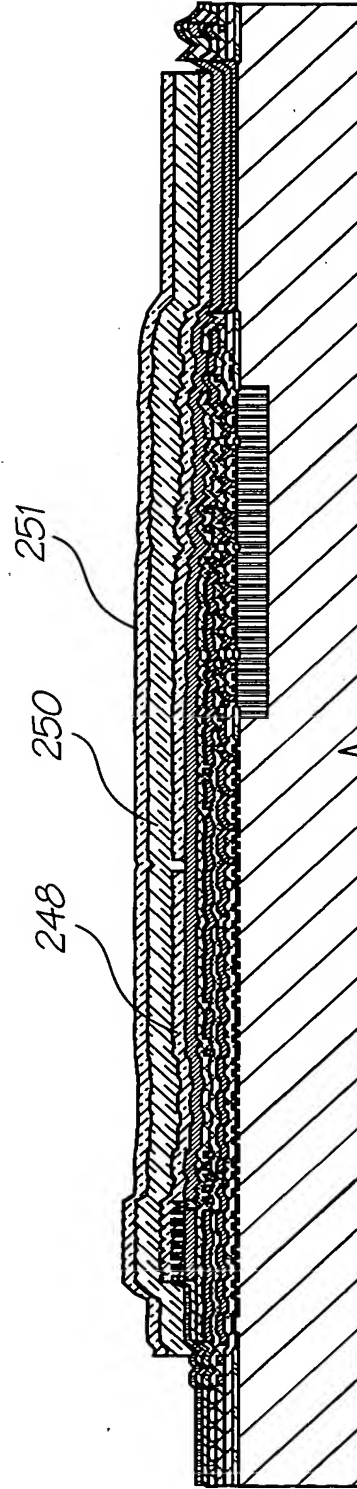


FIG. 55



Actuator / bend compensator mask

FIG. 56



Deposit actuator glass and bend compensator TiN, etch together

FIG. 57

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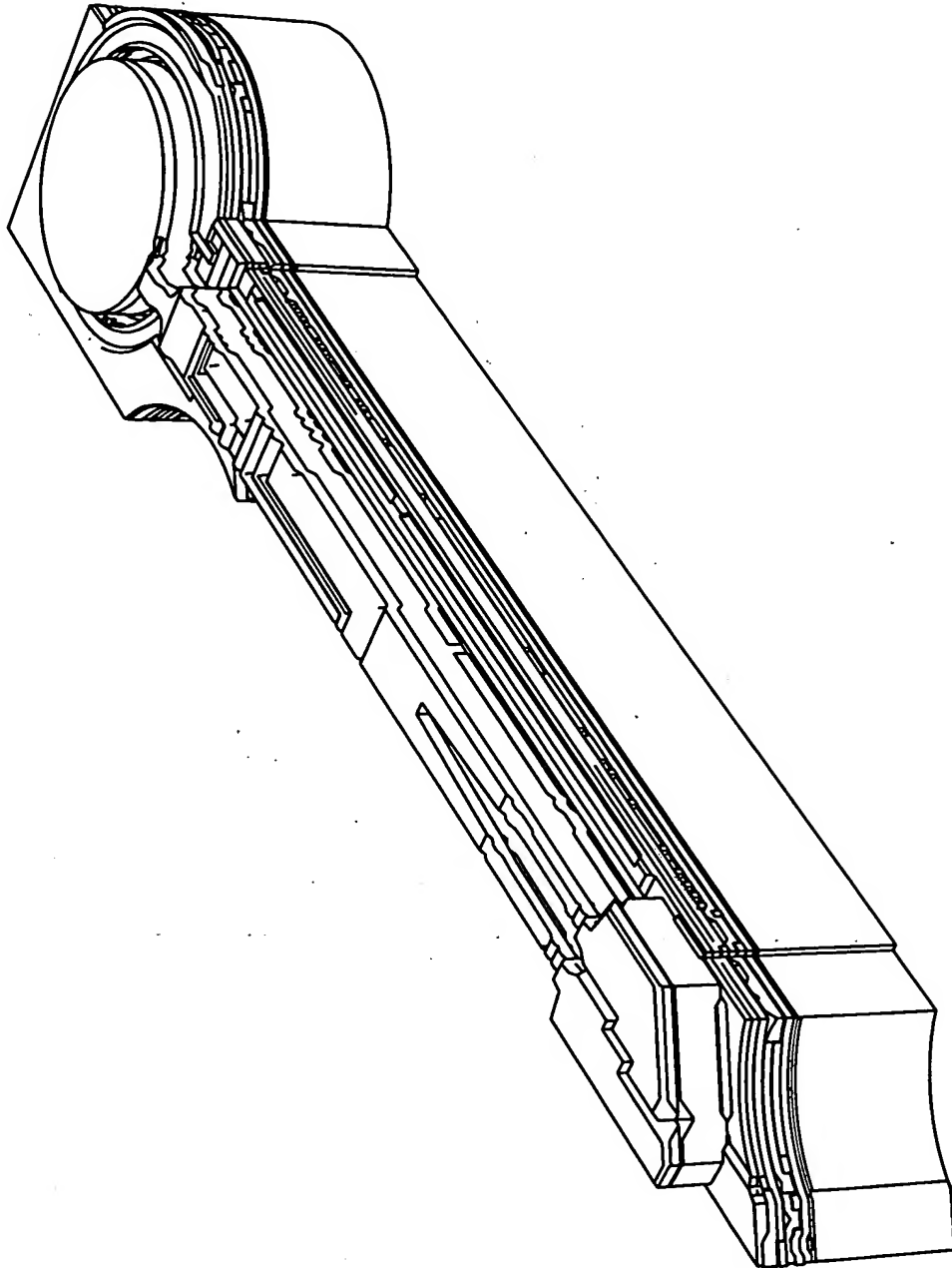
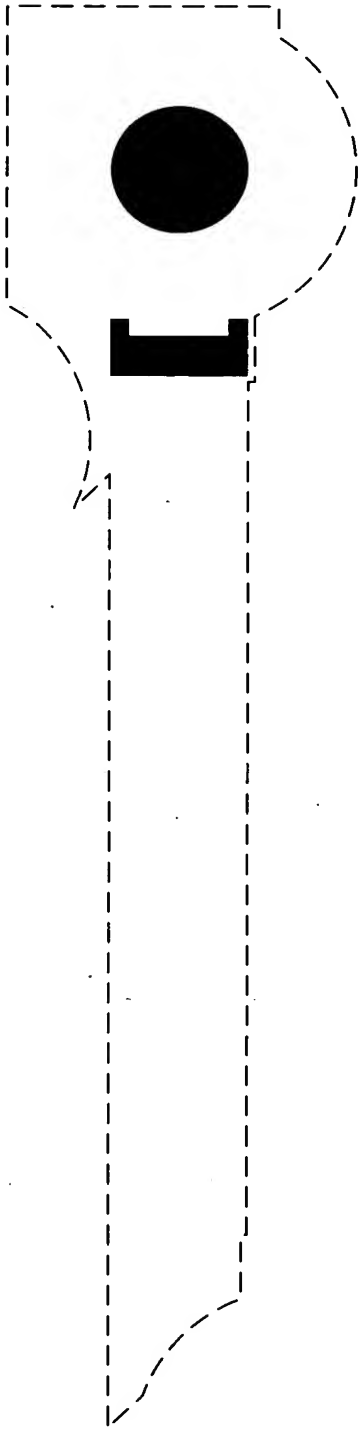
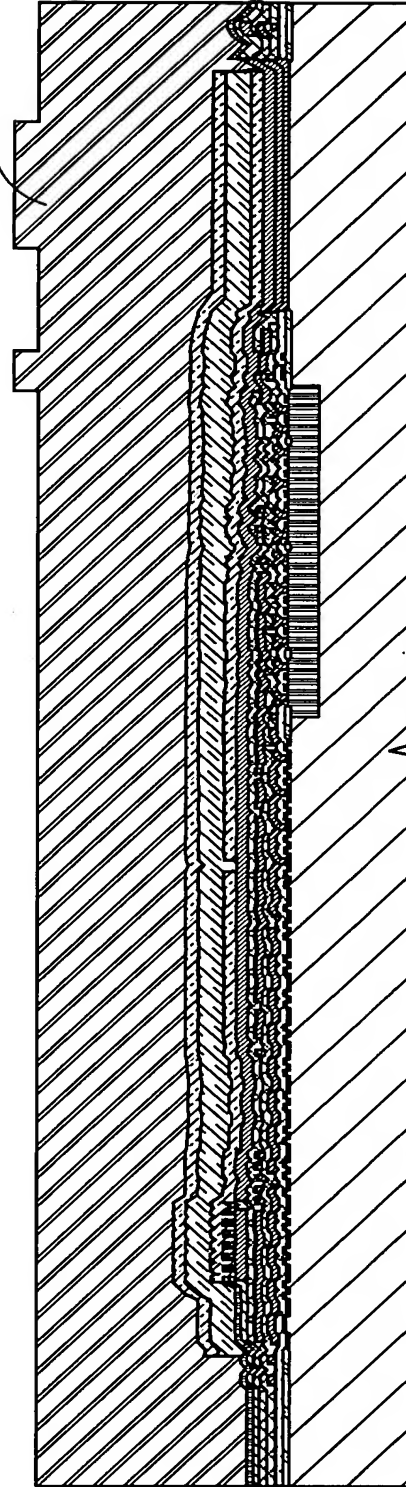


FIG. 58



Nozzle mask

FIG. 59



Deposit sacrificial layer, etch nozzles

FIG. 60

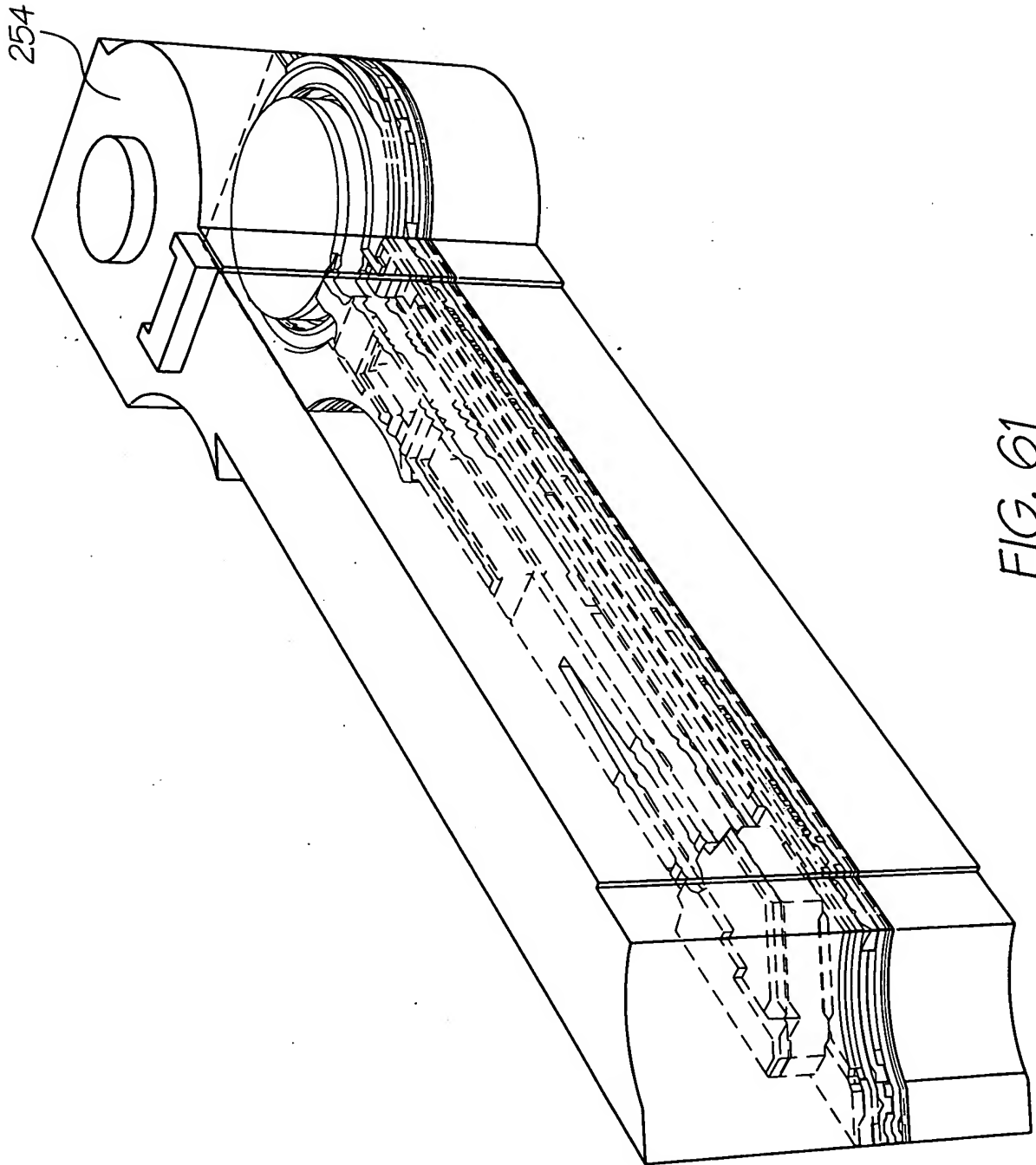
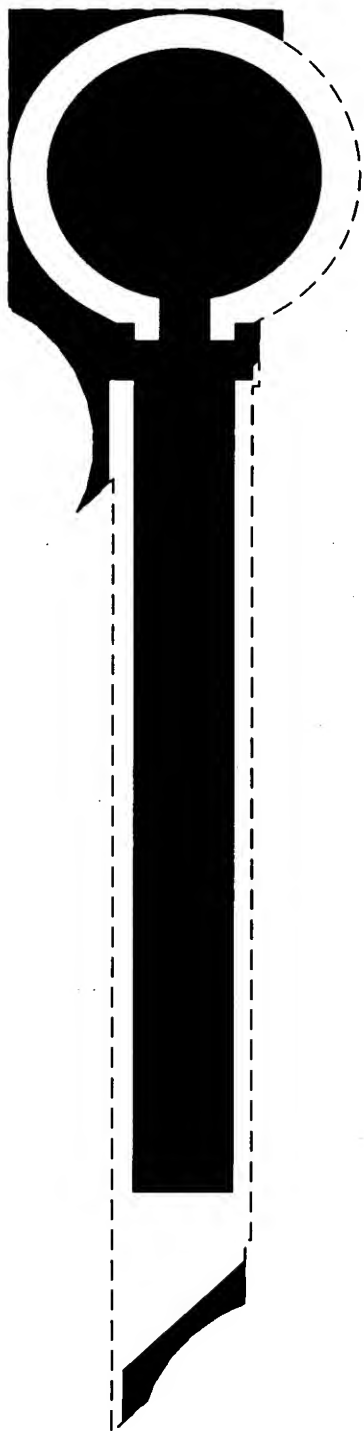


FIG. 61

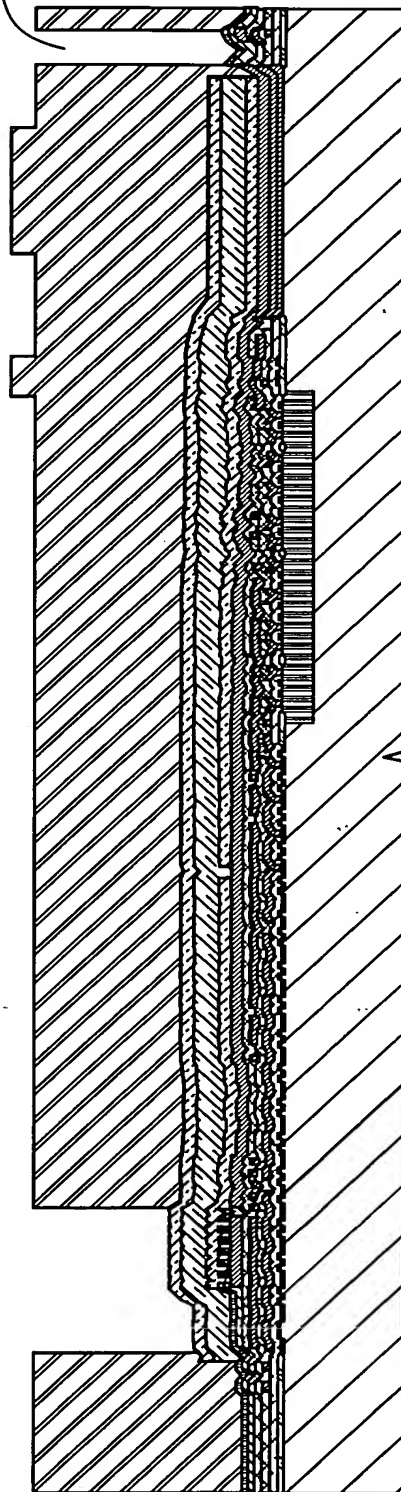


Chamber mask

FIG. 62

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255



Etch chambers in sacrificial layer

FIG. 63

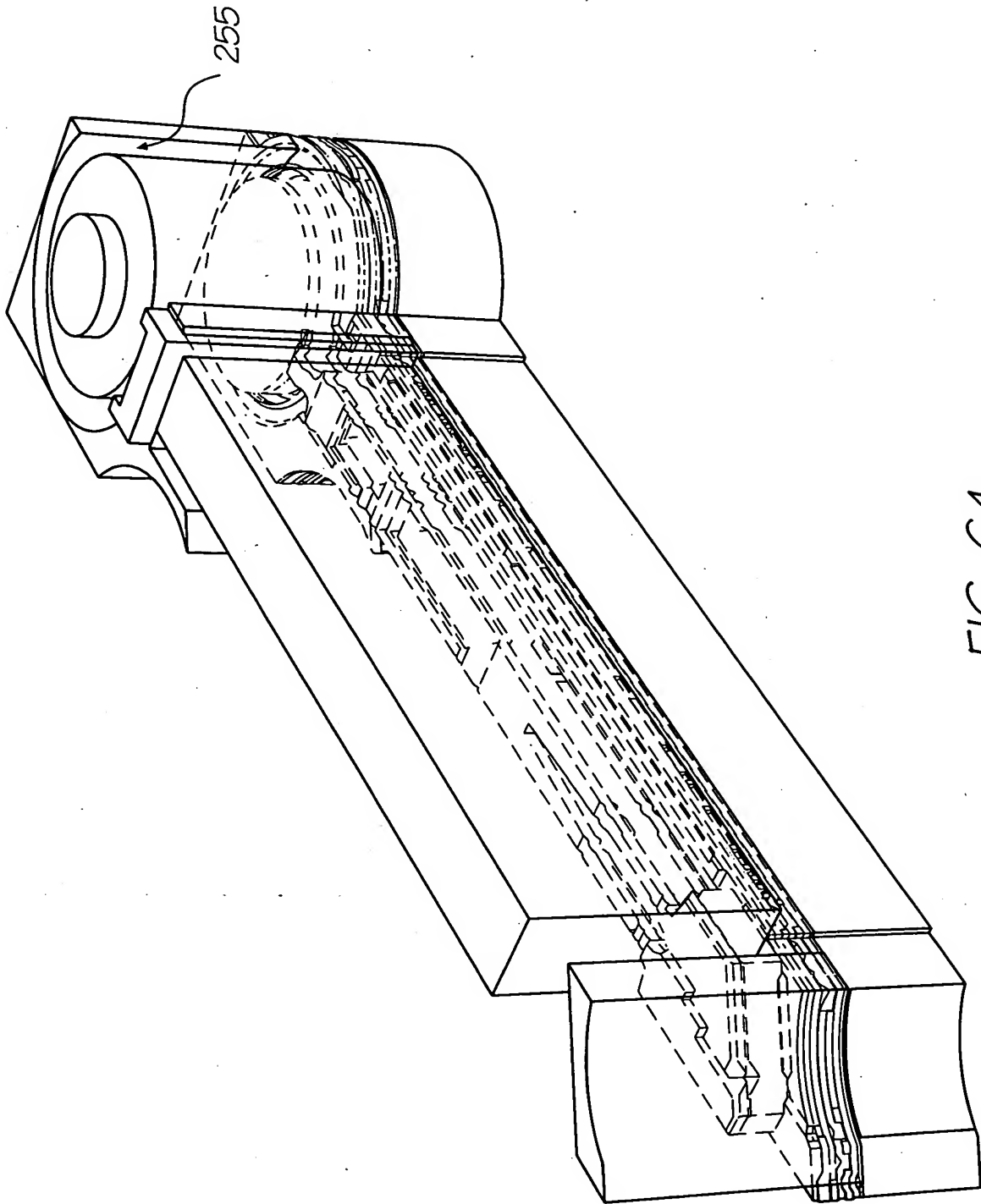


FIG. 64

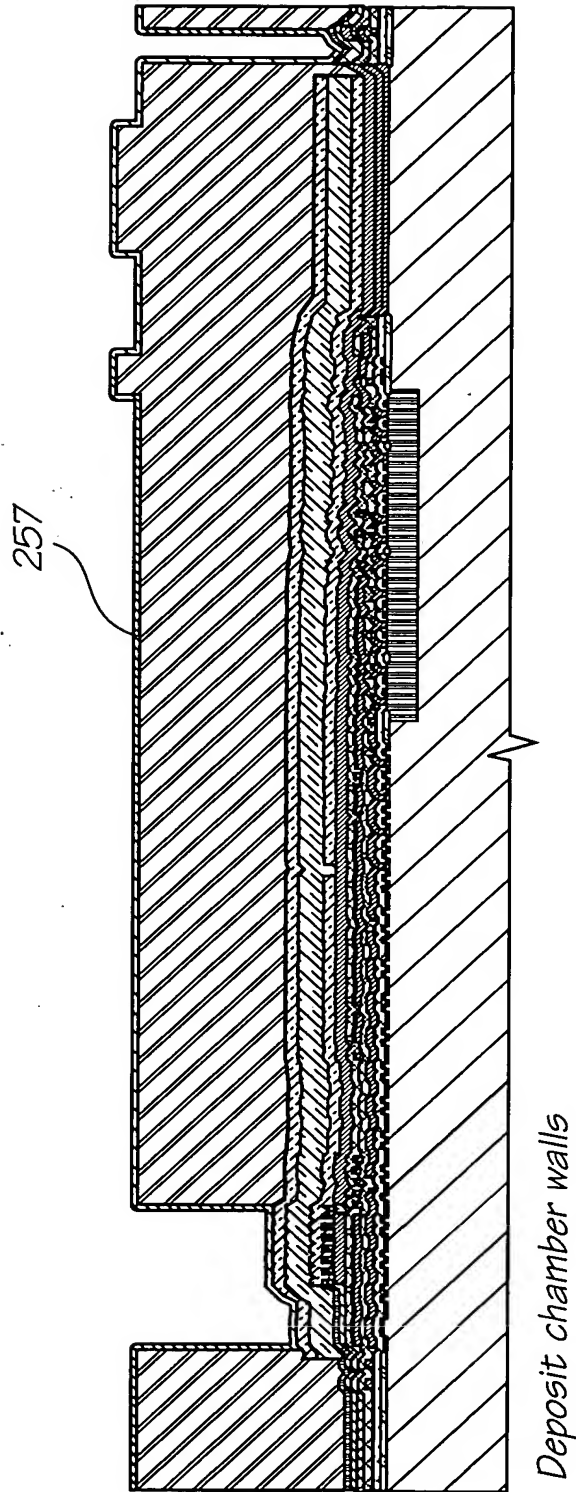


FIG. 65

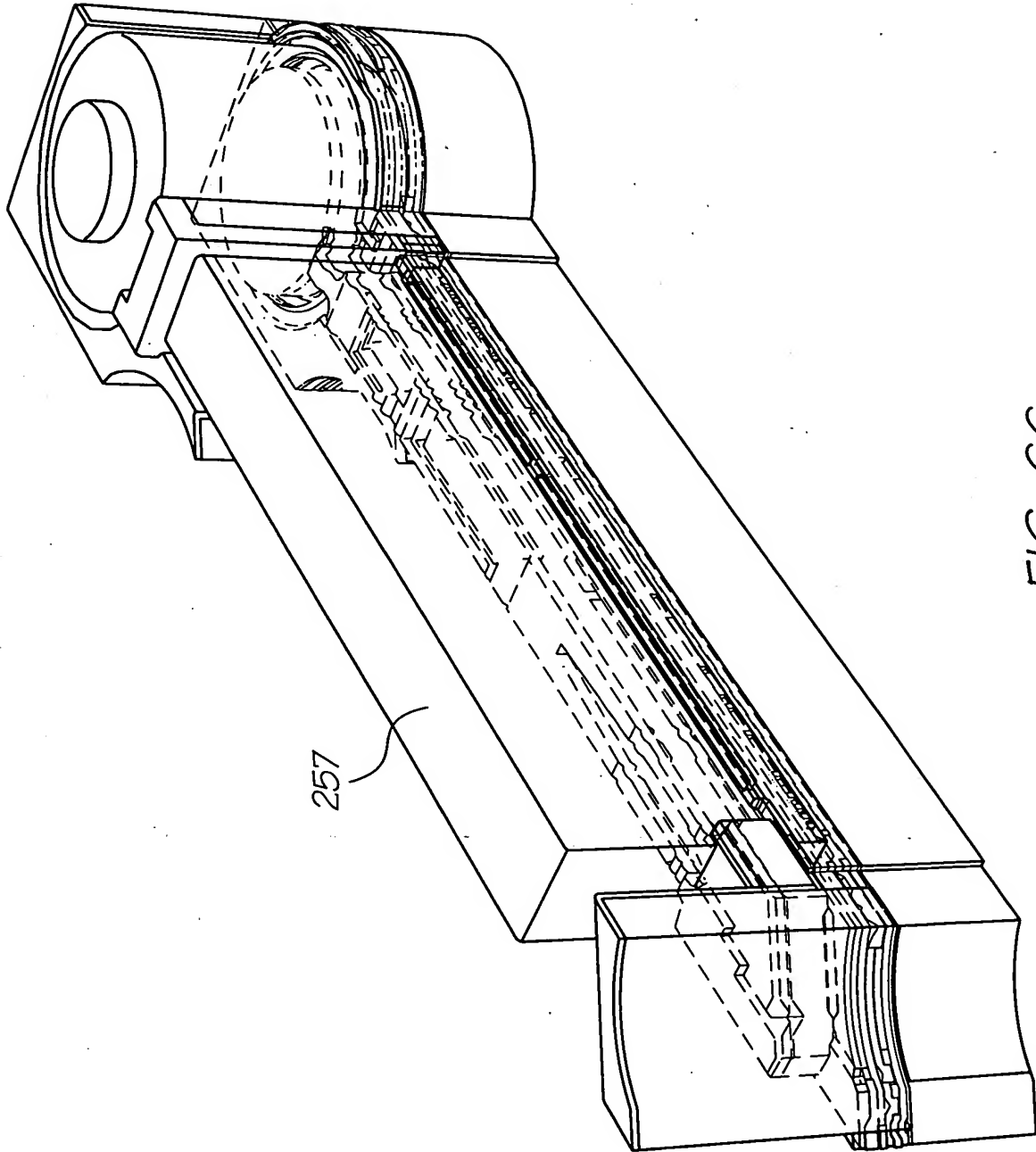


FIG. 66

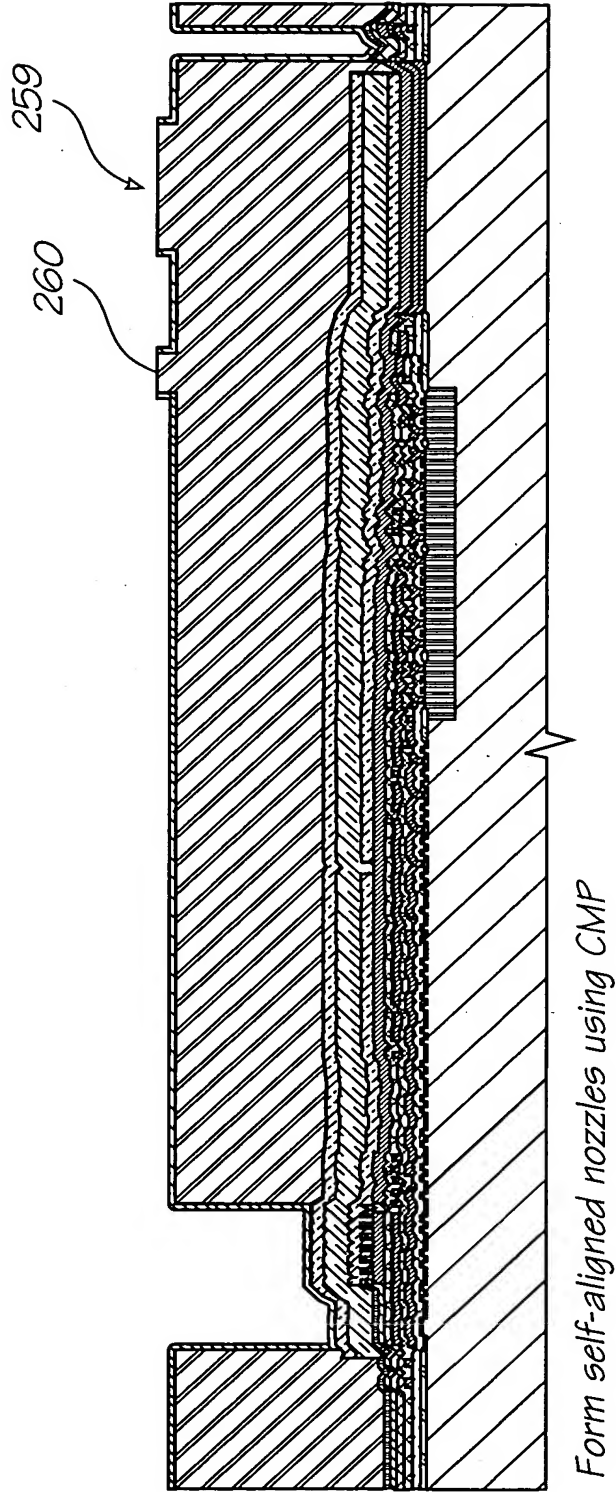


FIG. 67

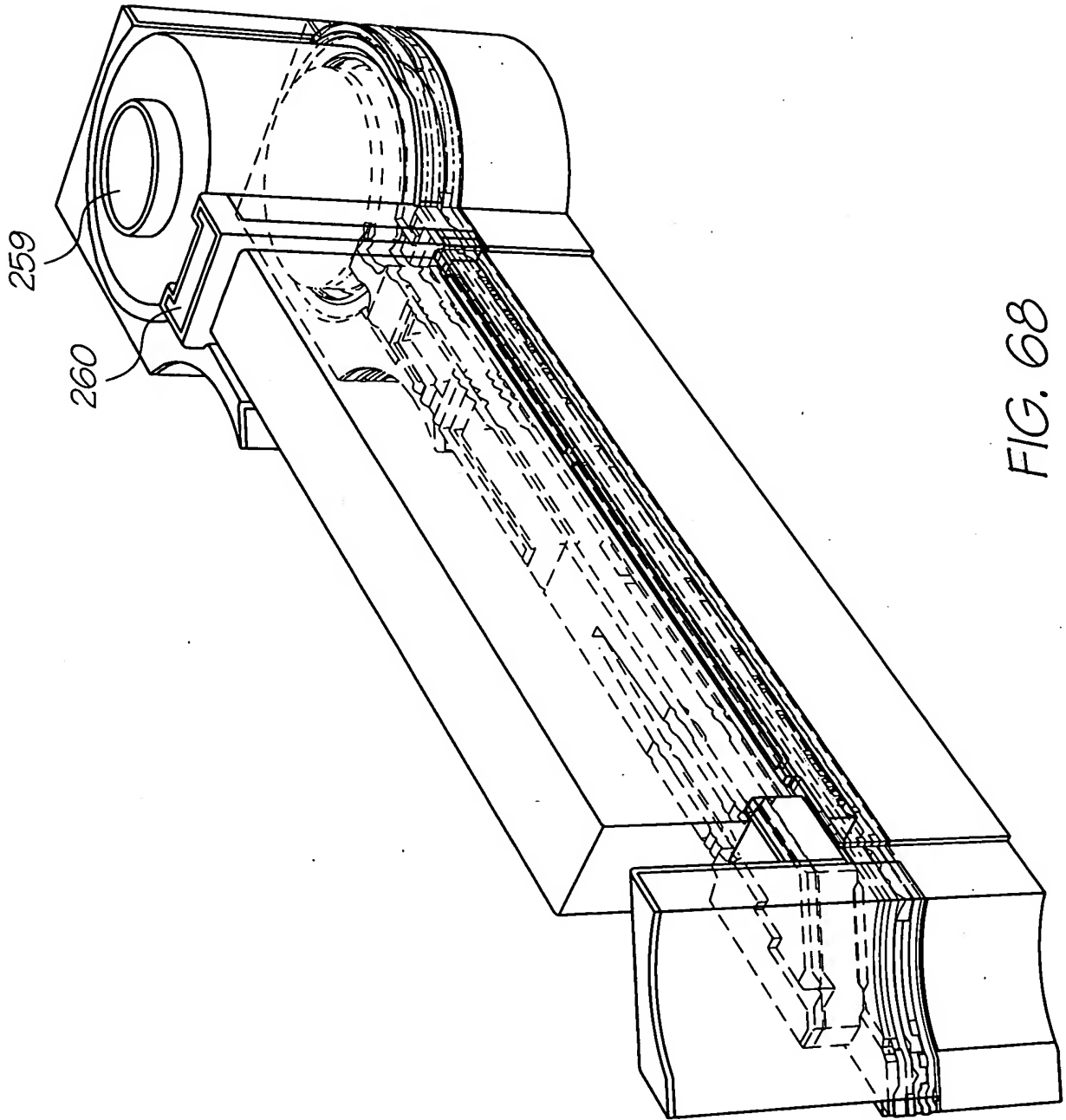
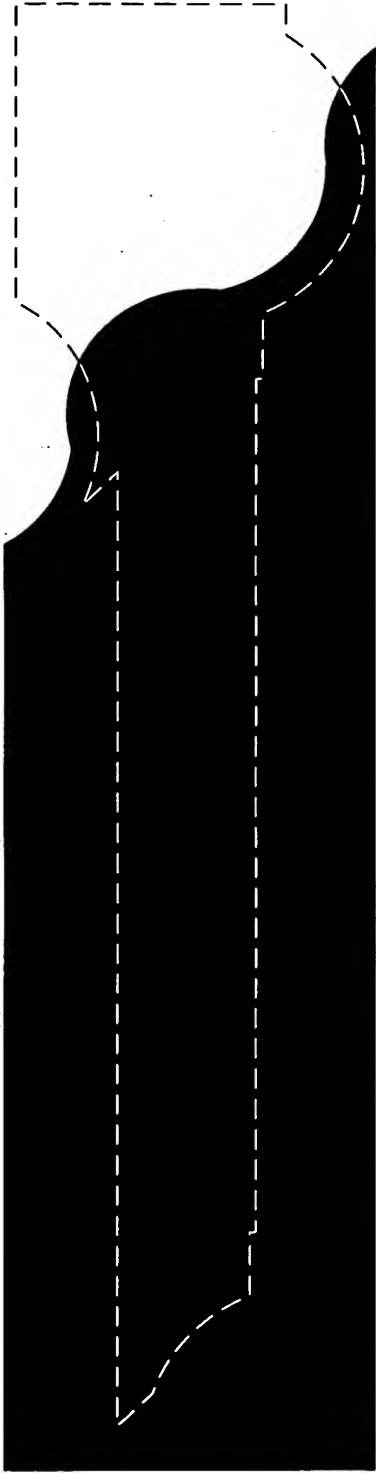
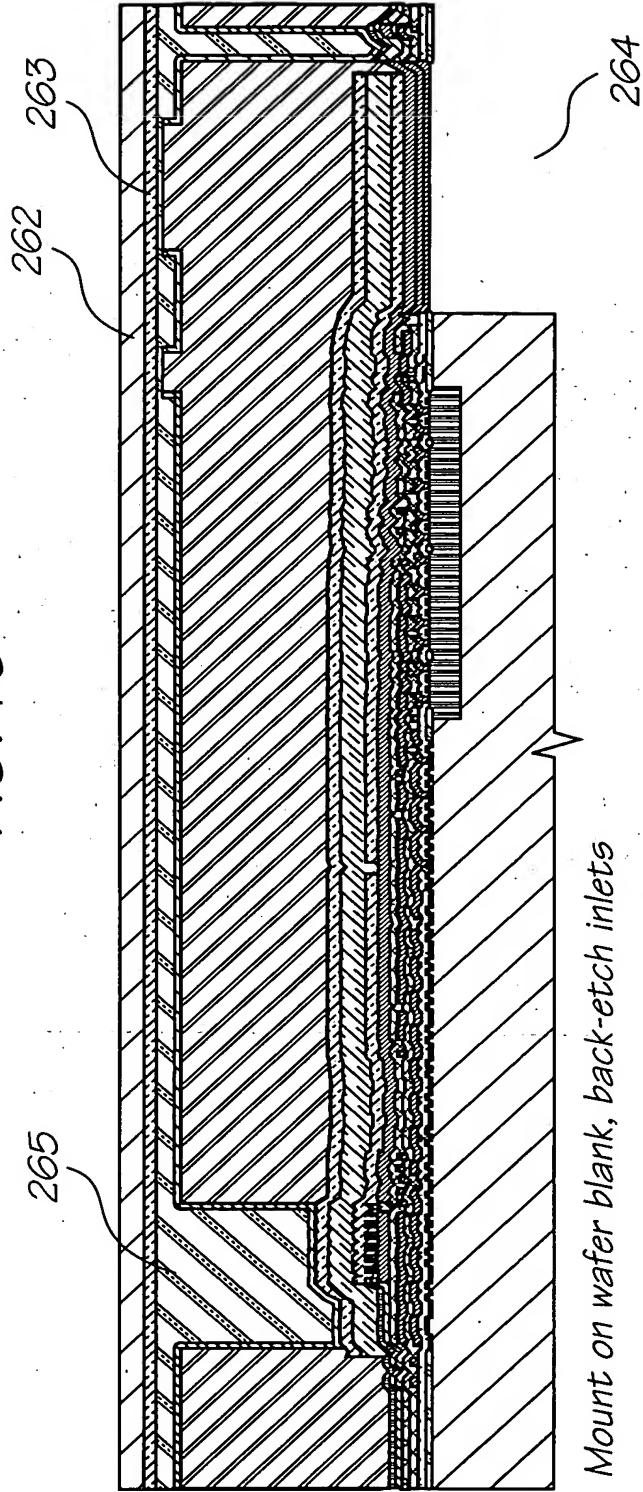


FIG. 68



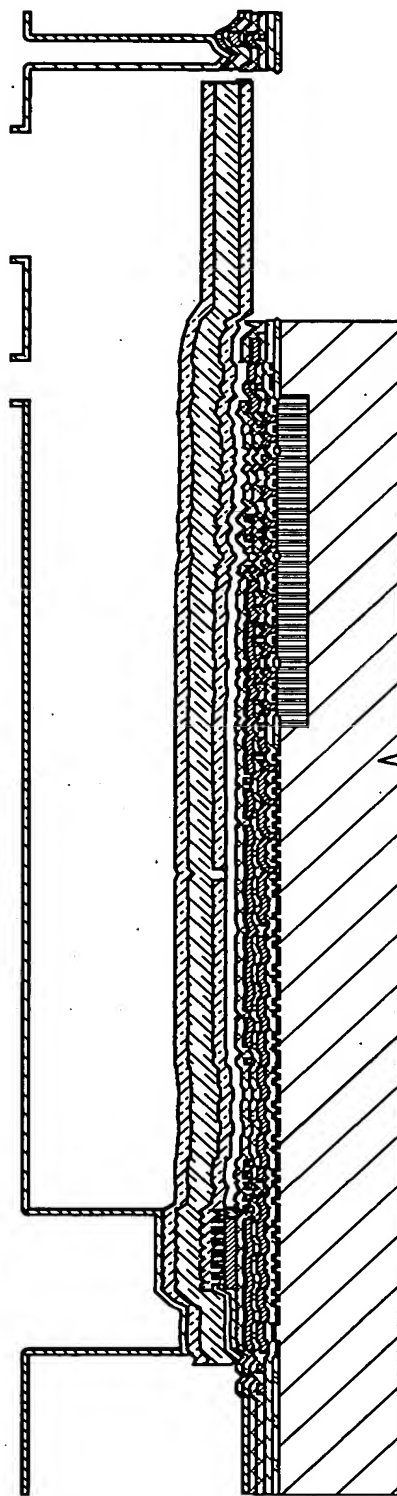
Back-etch inlet mask

FIG. 70



Mount on wafer blank, back-etch inlets

FIG. 69



Detach from wafer blank, etch sacrificial material

FIG. 71

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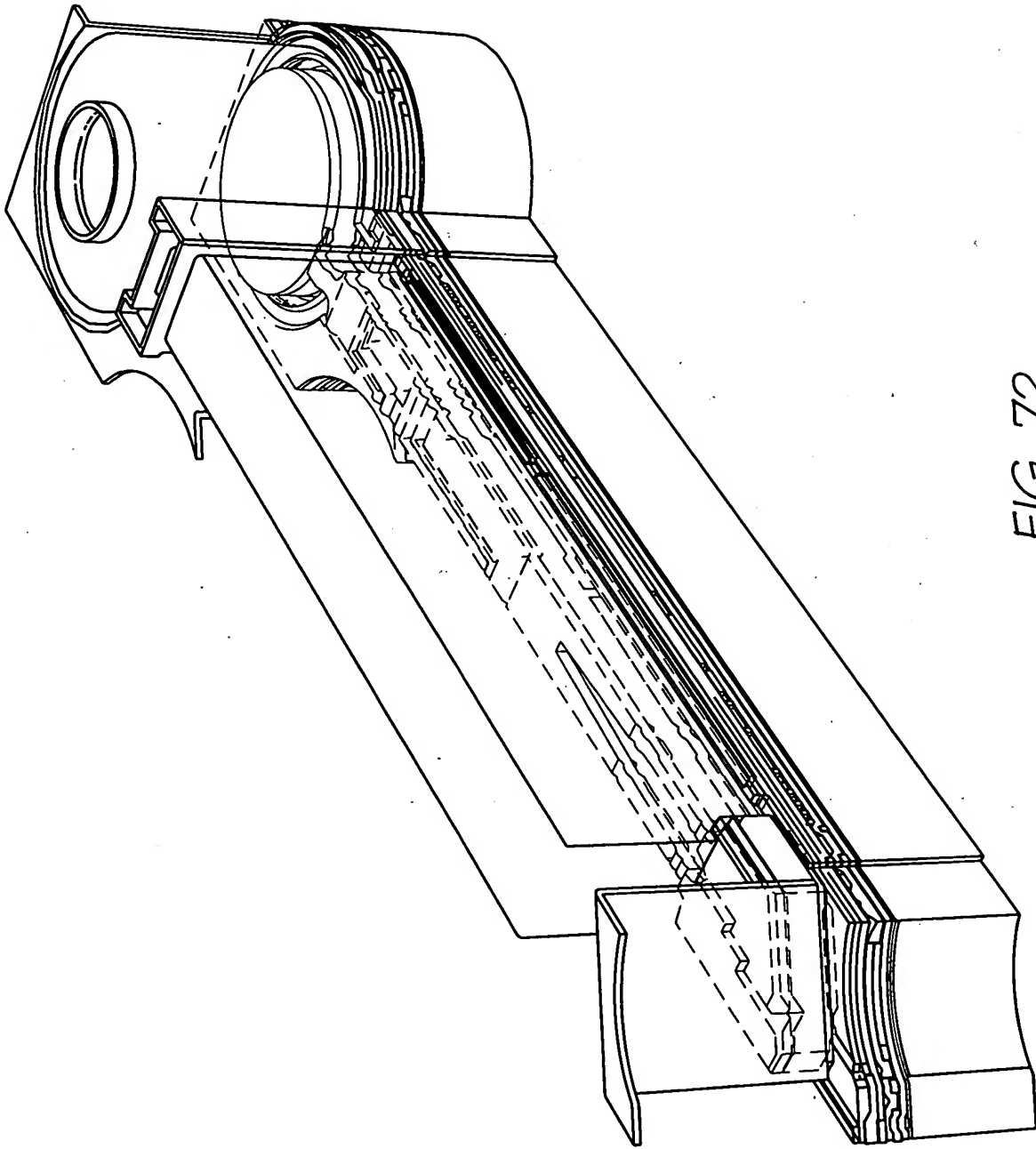


FIG. 72

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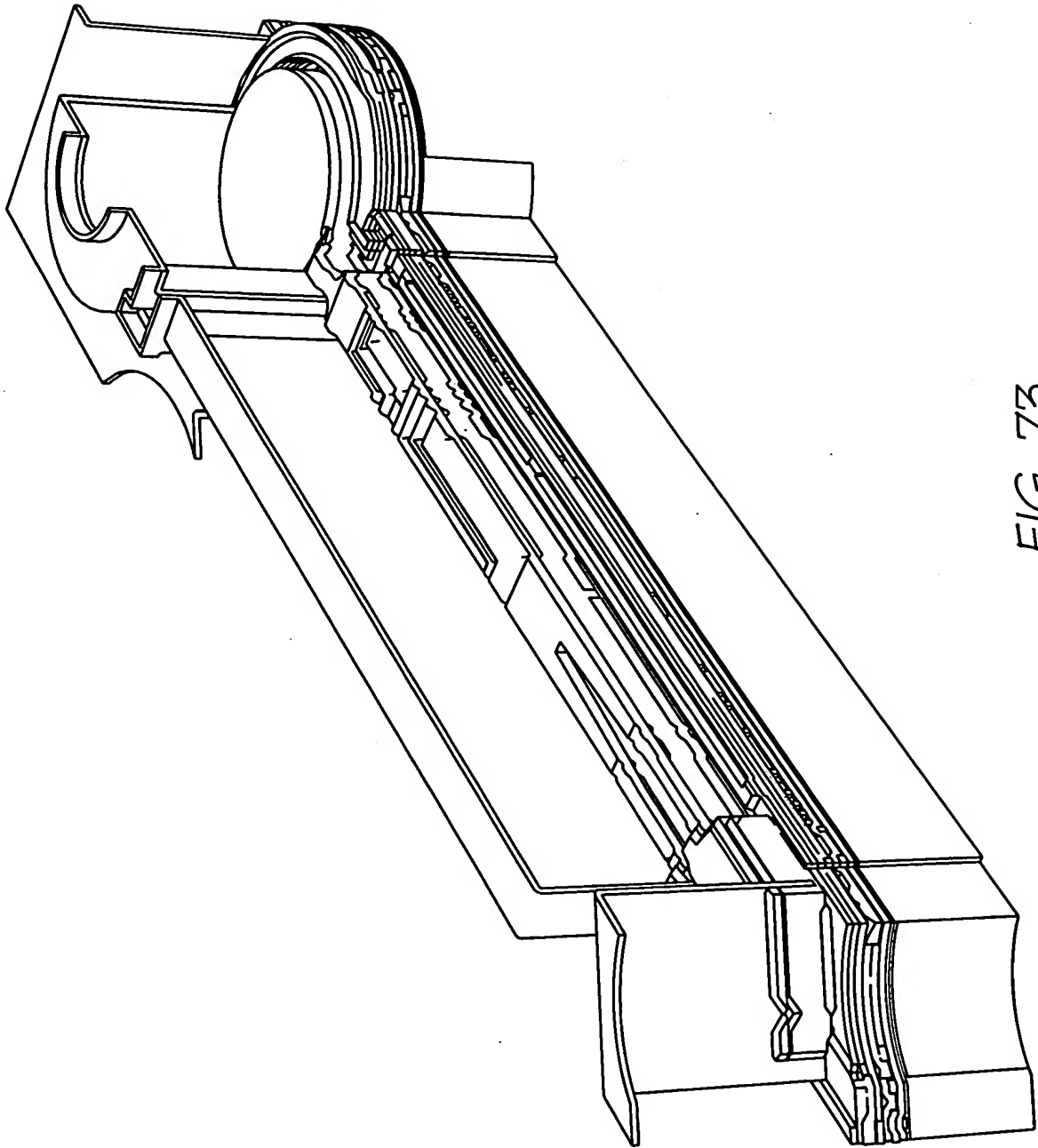
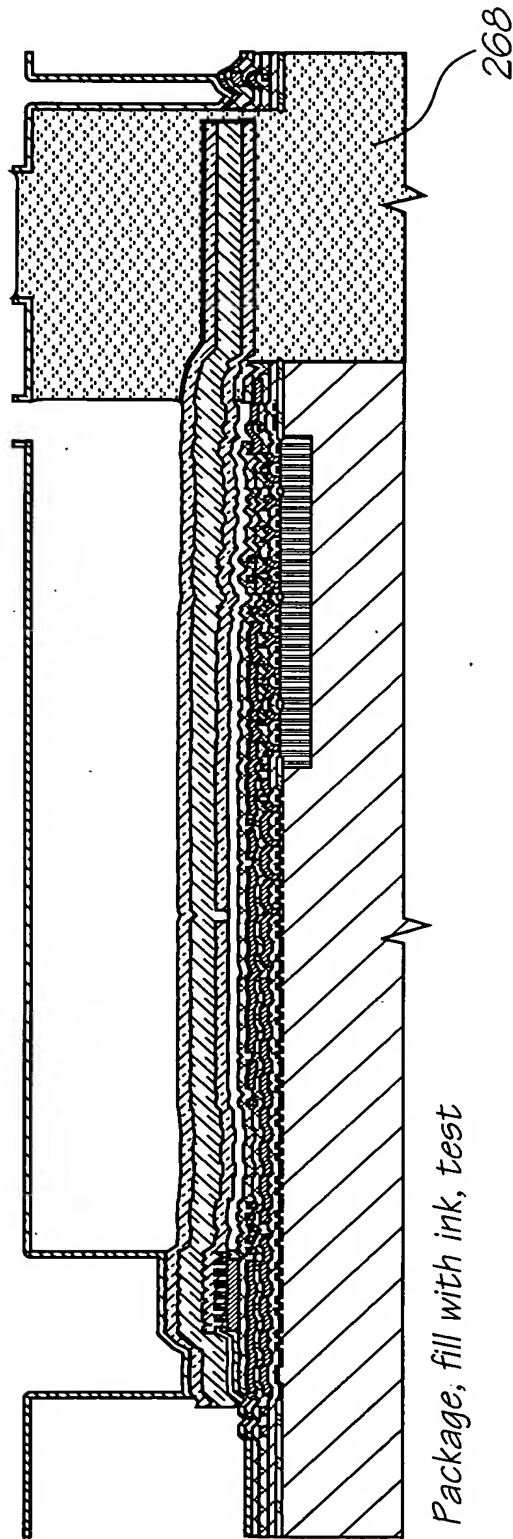


FIG. 73



Package, fill with ink, test

FIG. 74

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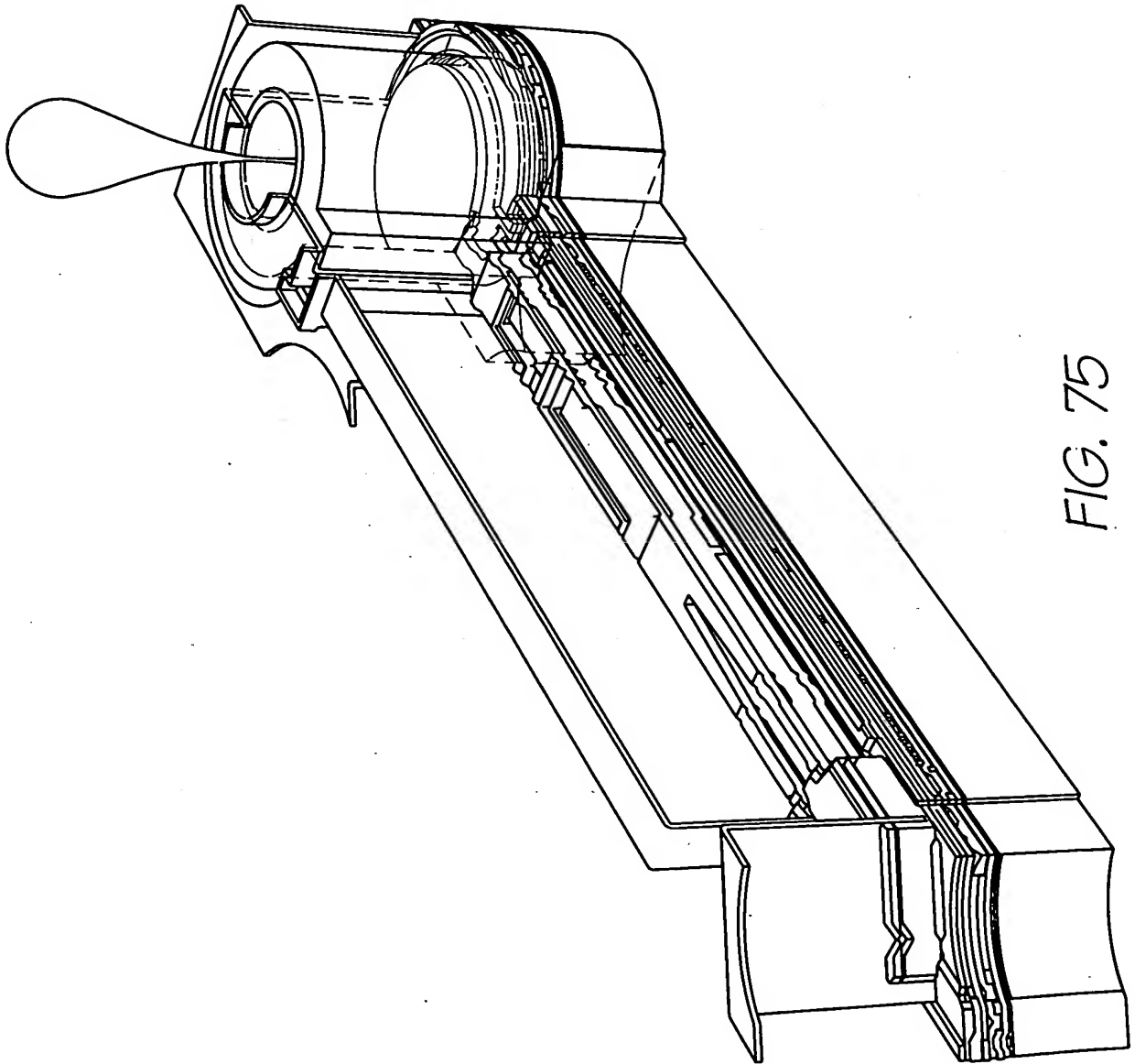


FIG. 75

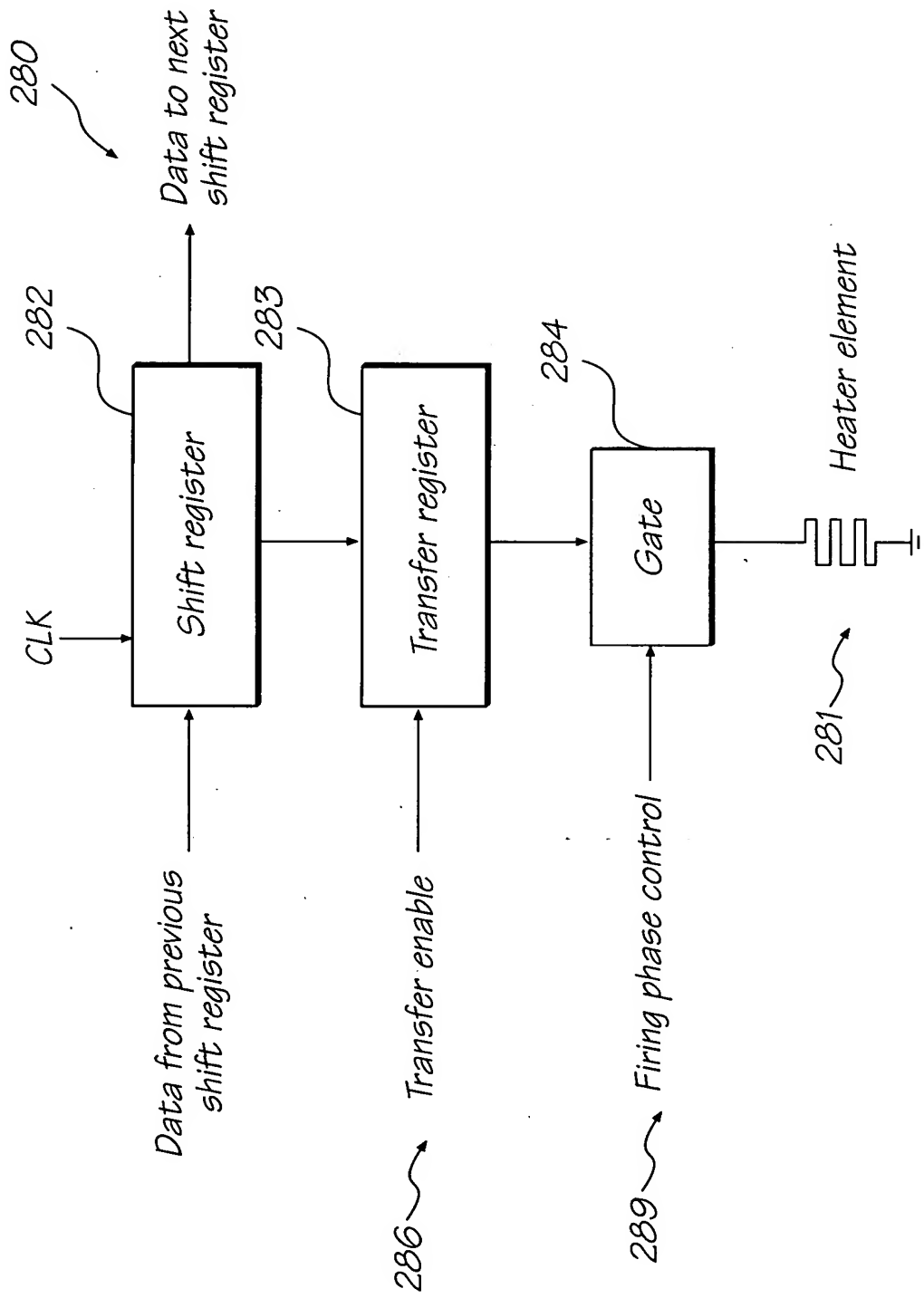


FIG. 76

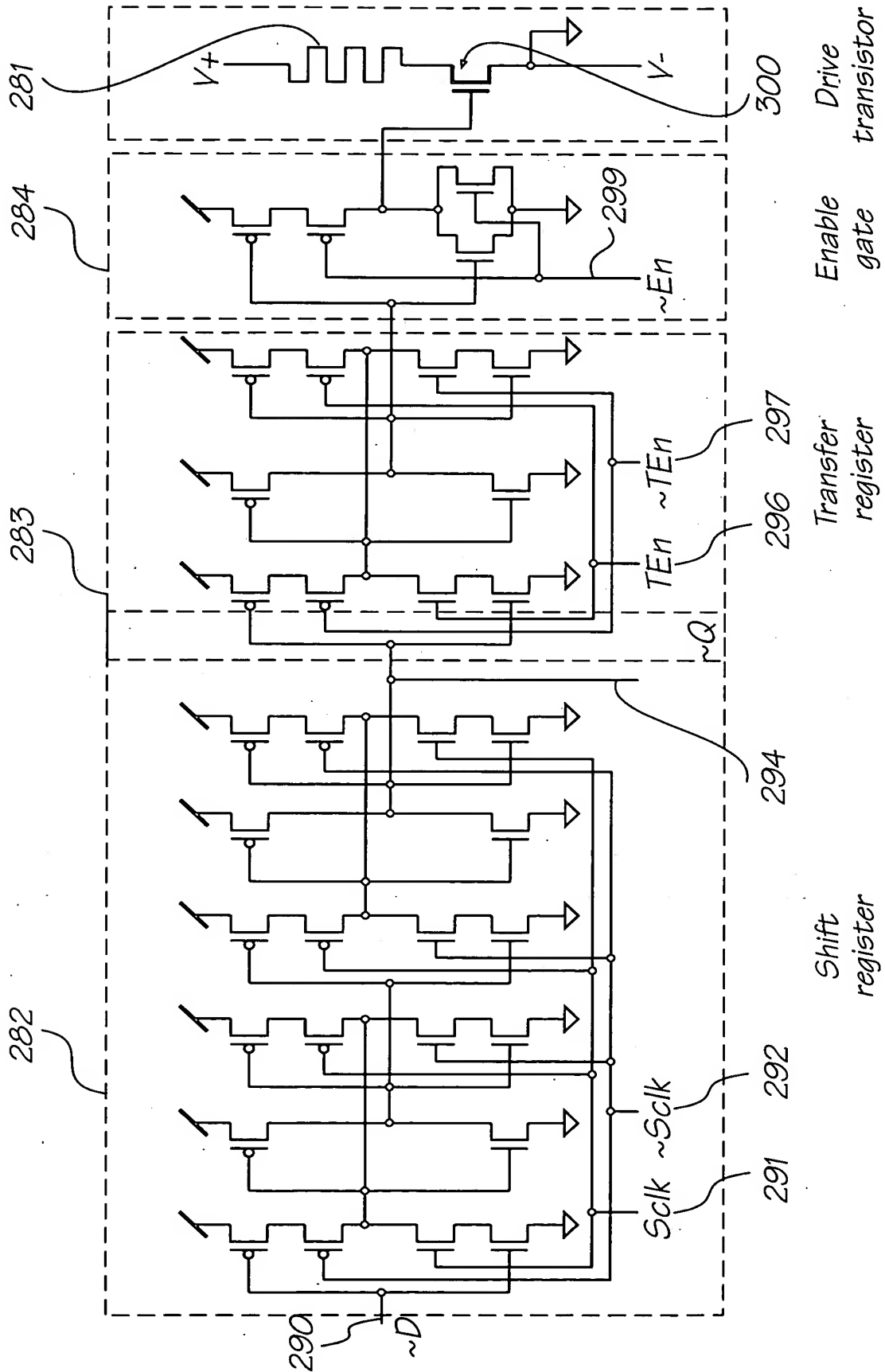


FIG. 77

Key



























	Silicon		Poly		Via 2		Actuator TiN		Cyan Ink
	Contacts		Contacts		Metal 3		Actuator Glass		Magenta Ink
	Active		Metal 1		Via 3		Compensator TiN		Yellow Ink
	p+		Via 1				Sacrificial		
	n+		Metal 2				Sacrificial-nozzle		
									Floor
									Wall
									Roof
									Rim
									Shroud

FIG. 78

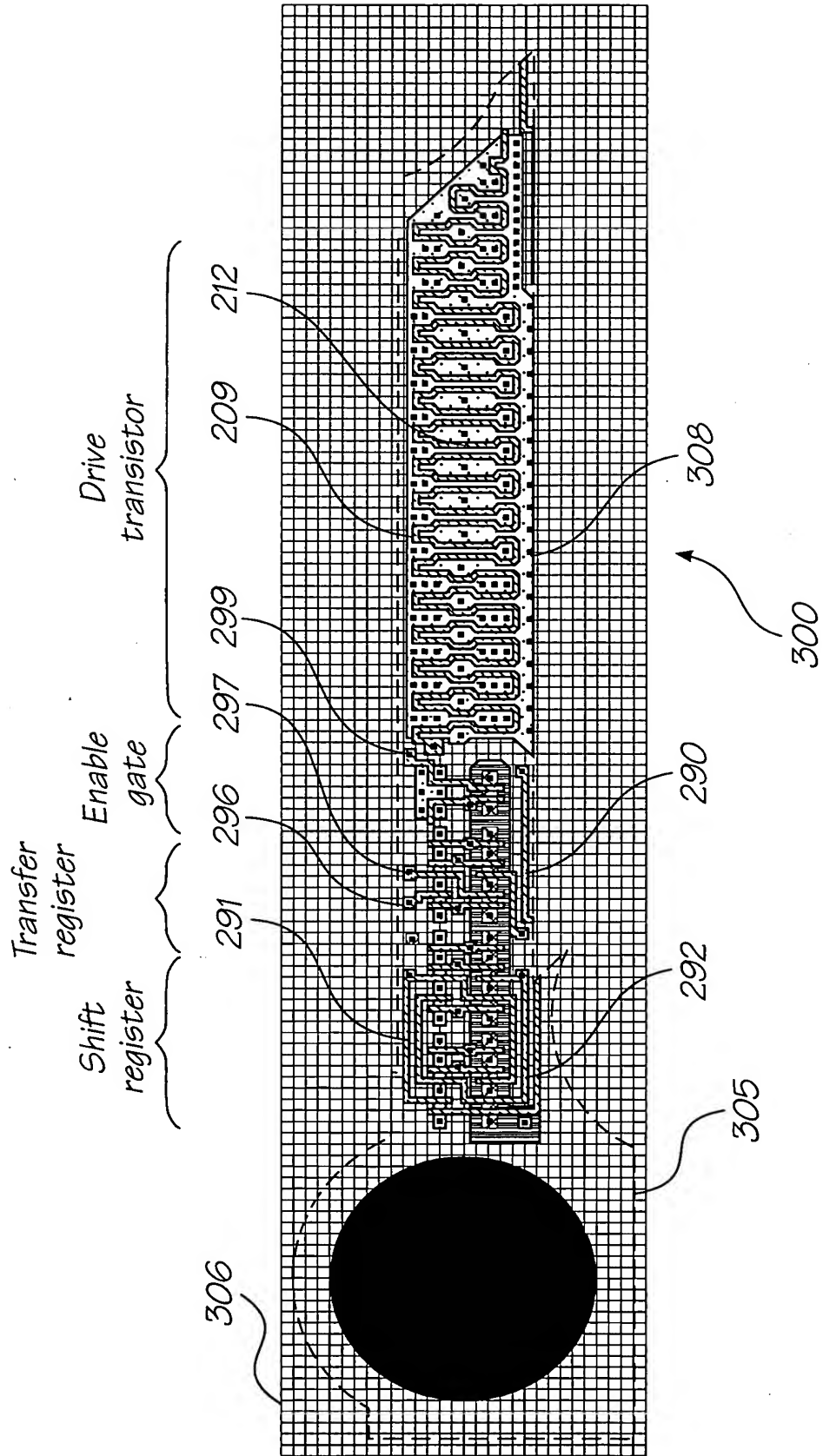


FIG. 79

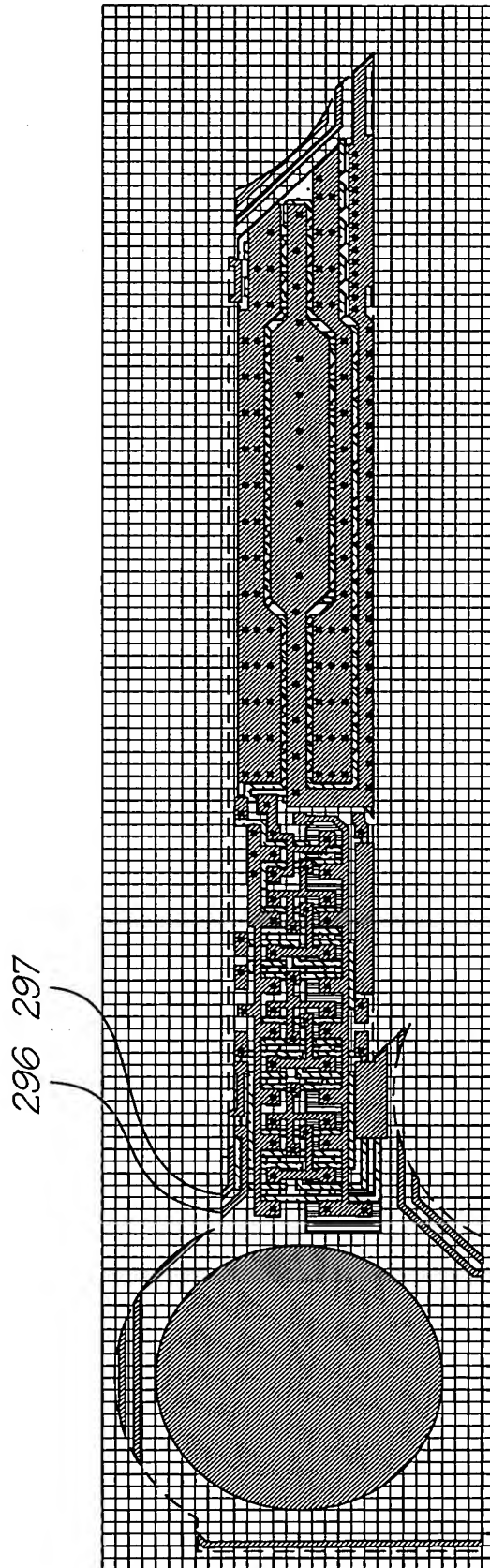


FIG. 80

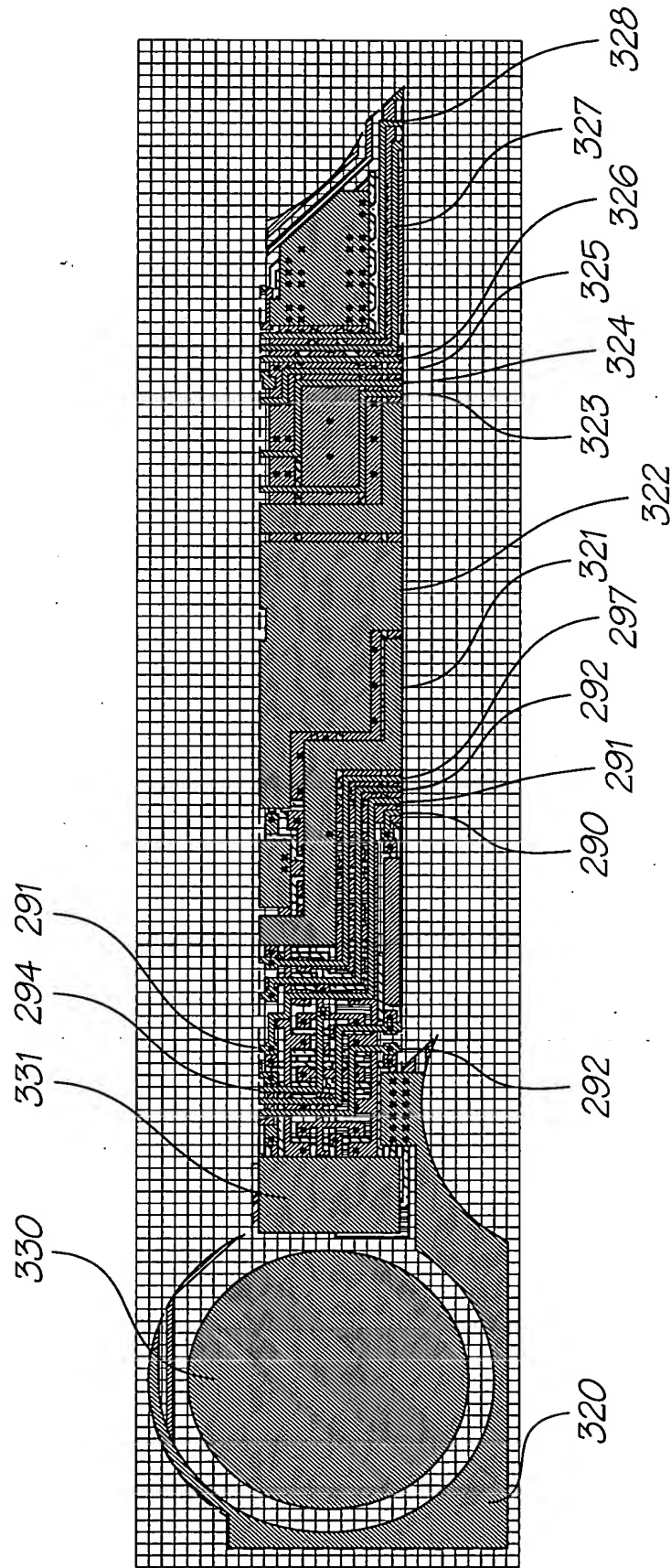


FIG. 81

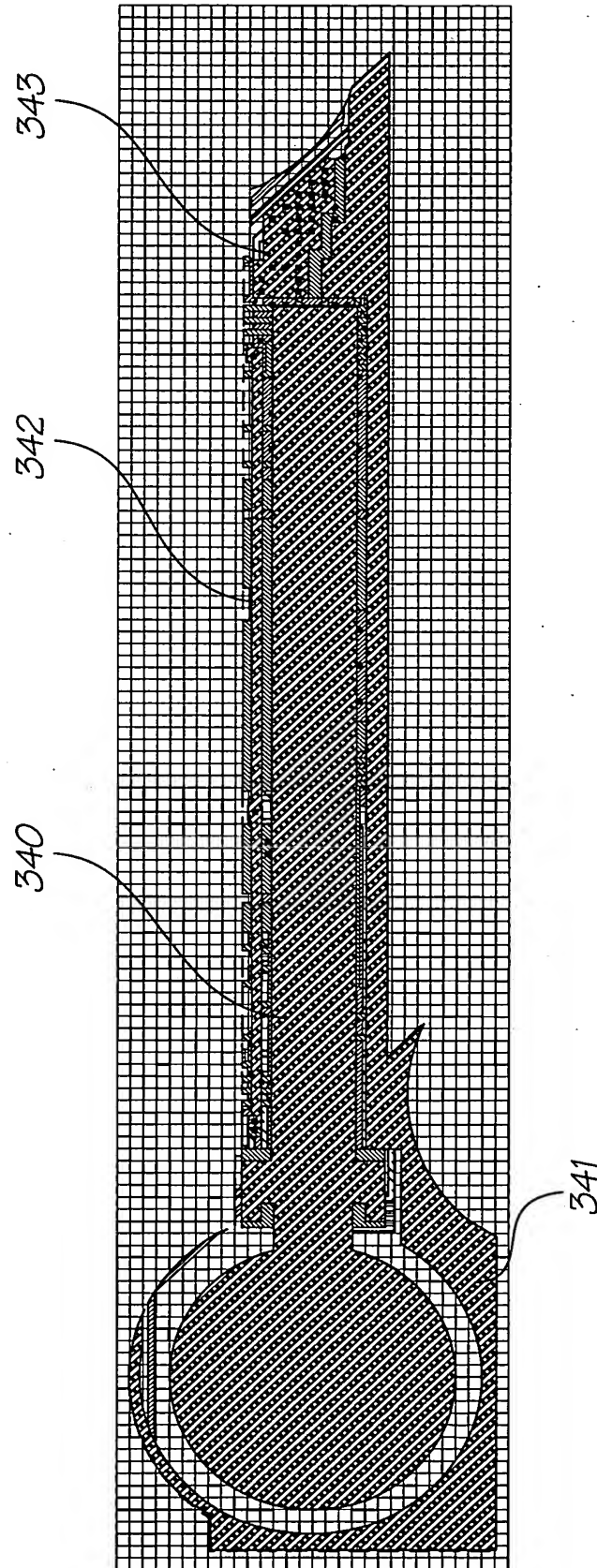


FIG. 82

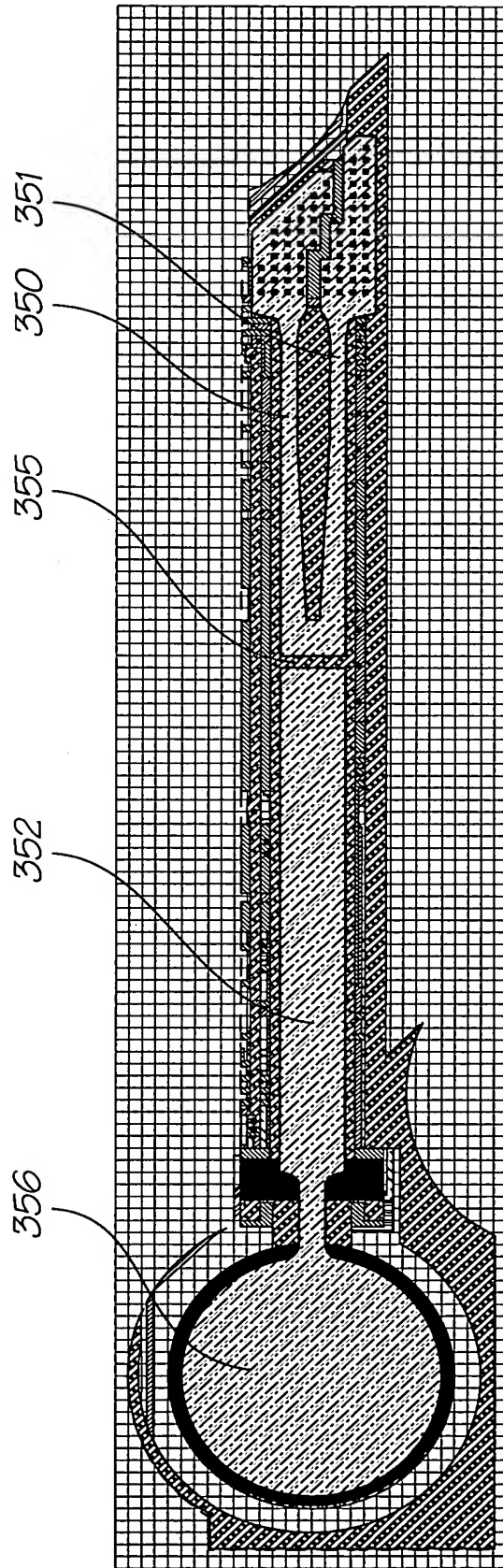


FIG. 83

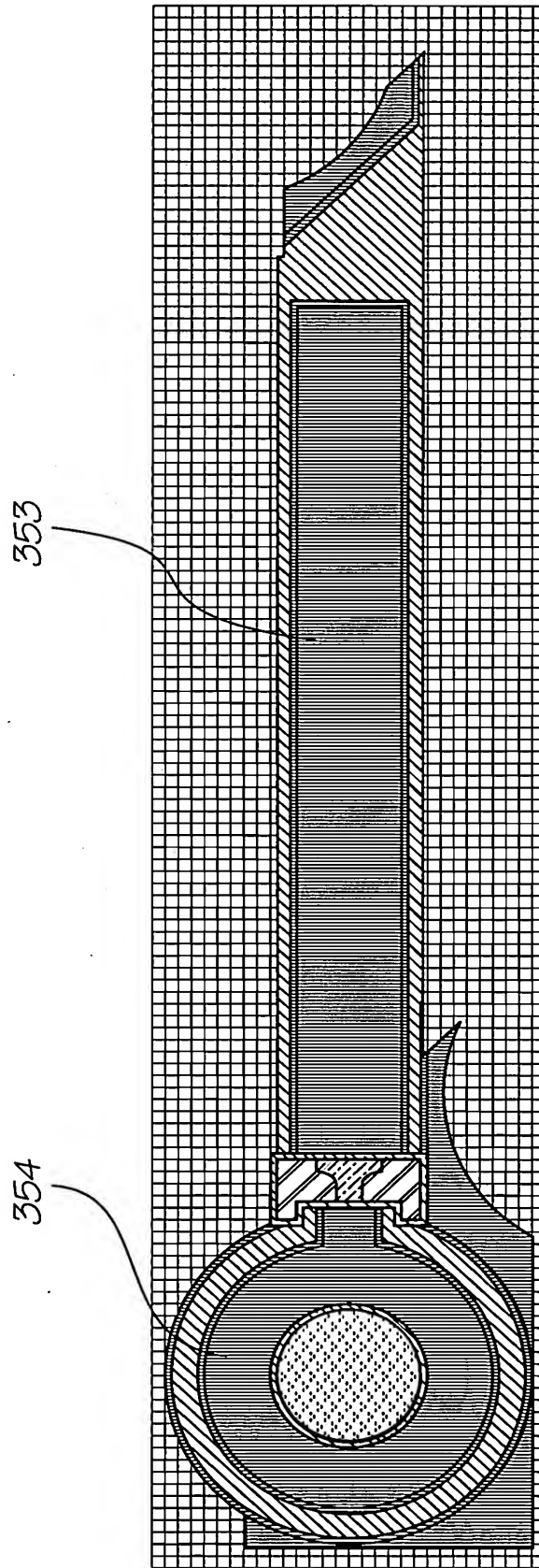


FIG. 84

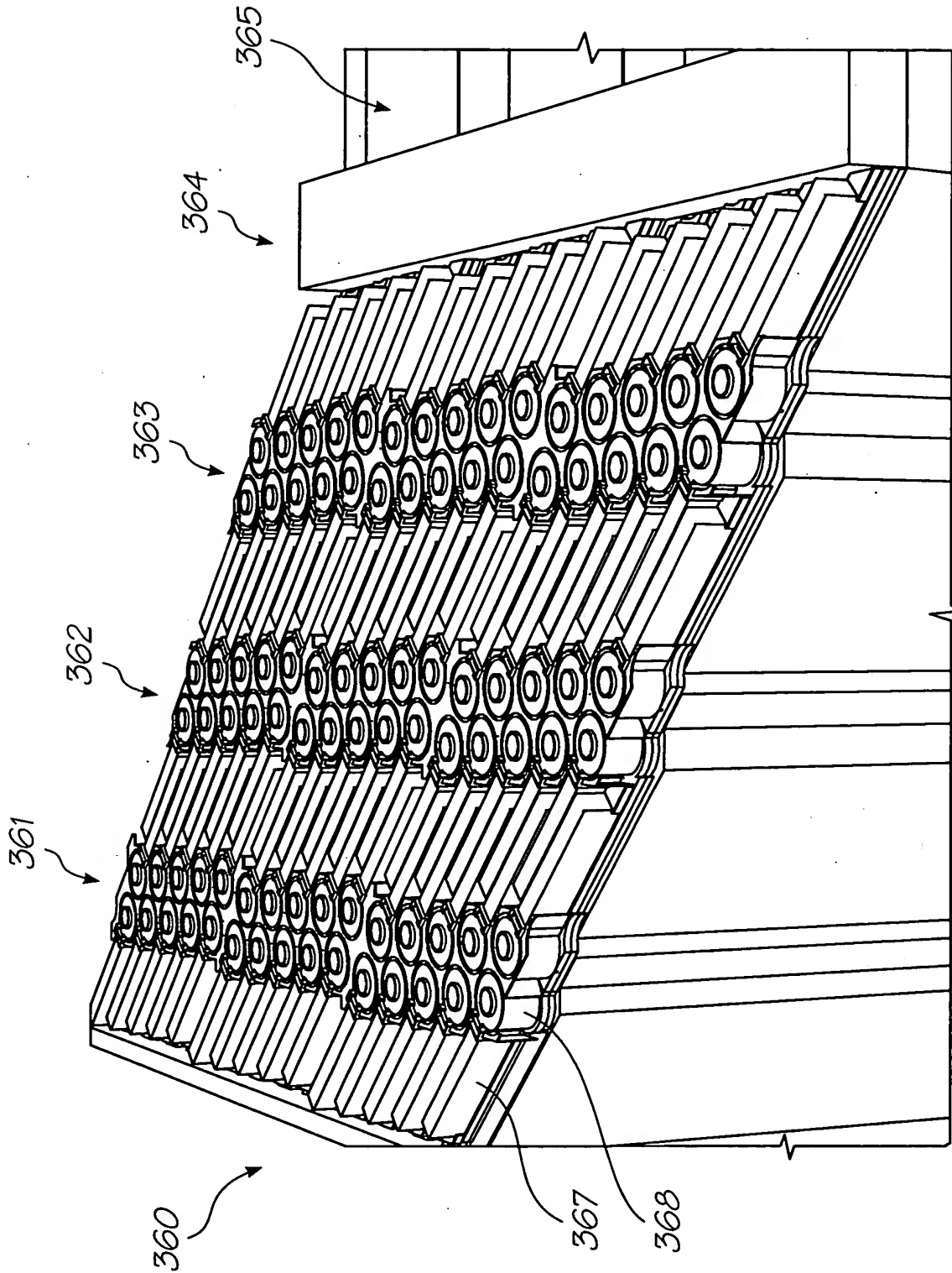


FIG. 85

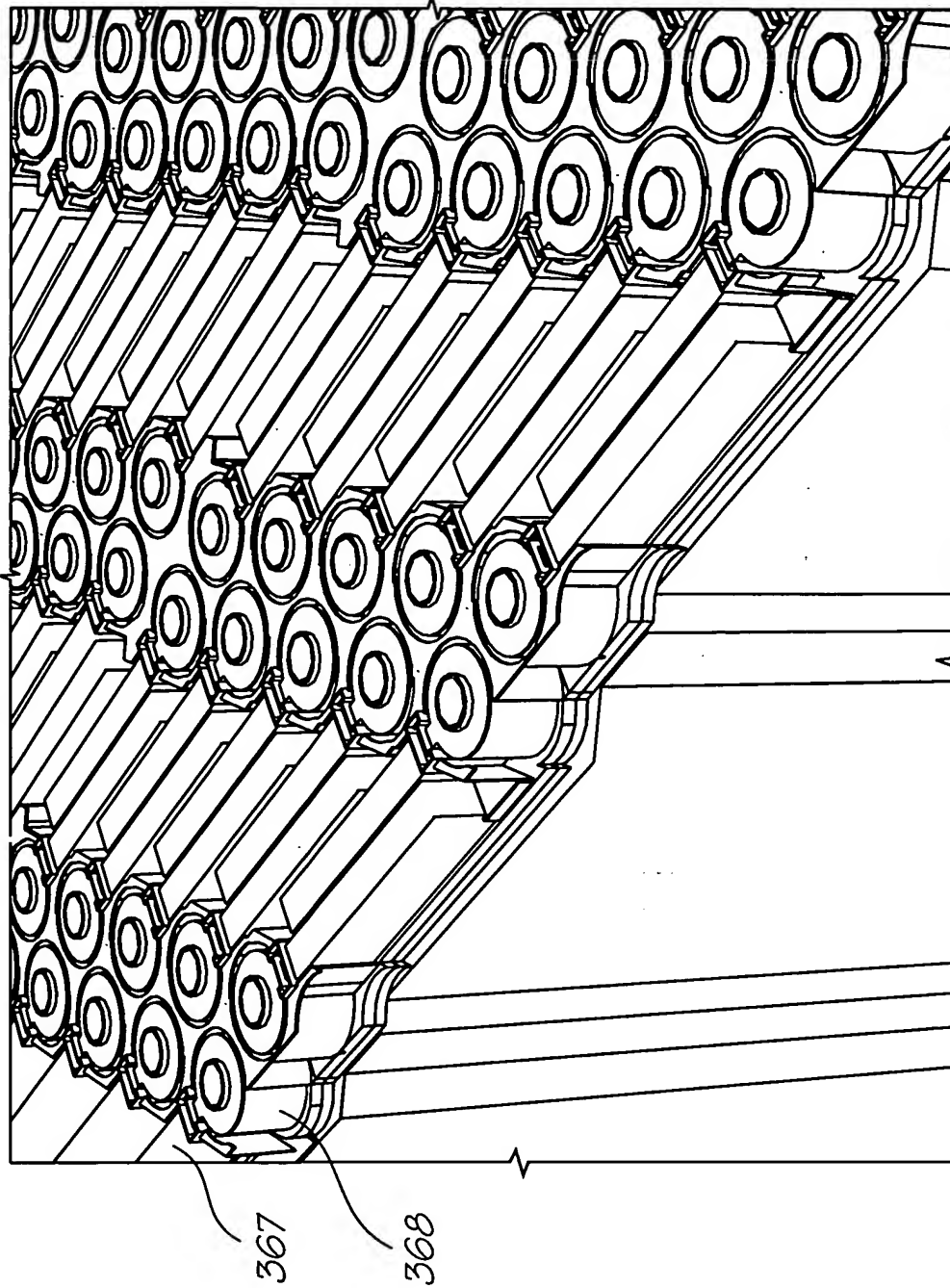


FIG. 86

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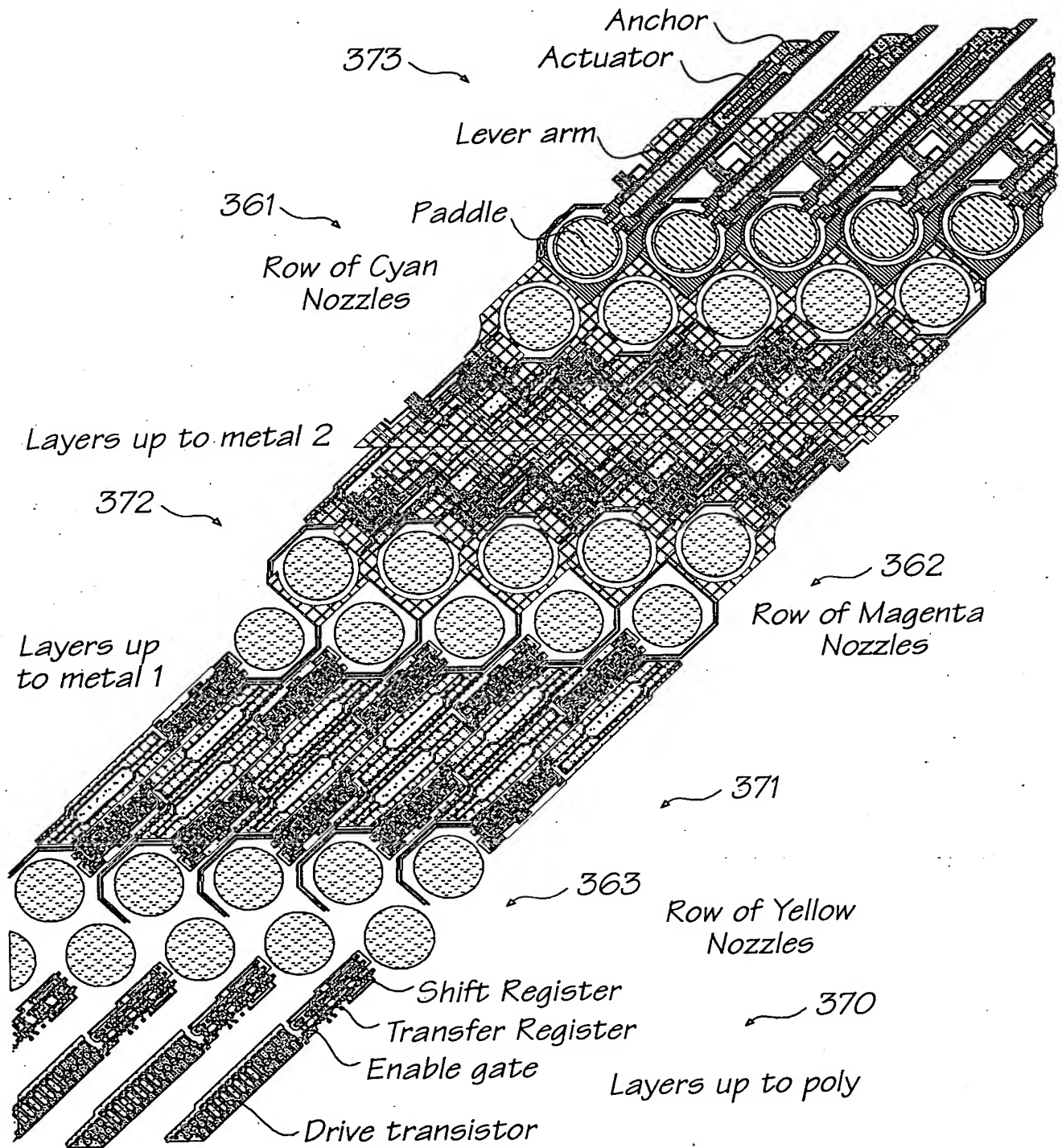


FIG. 87

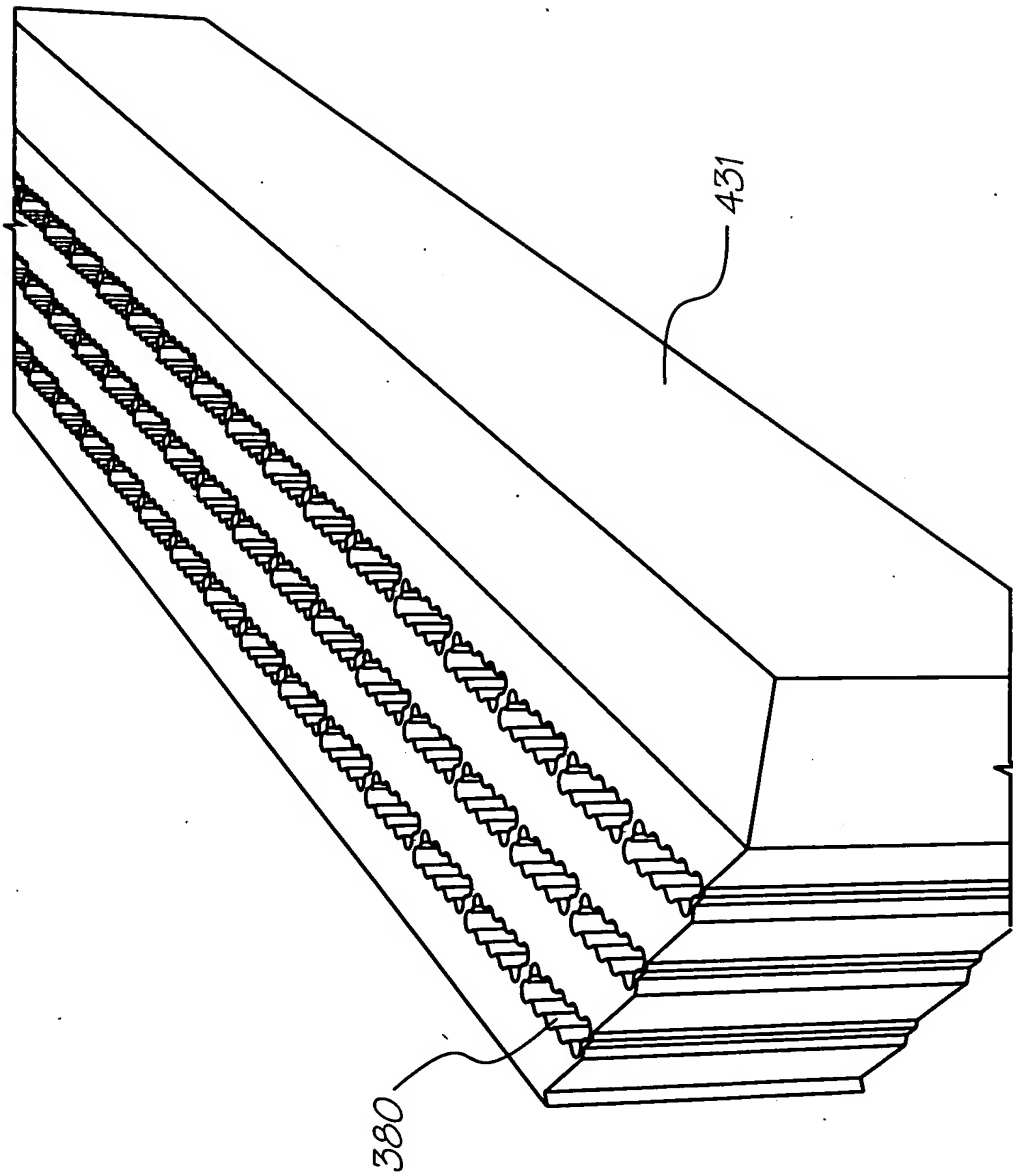


FIG. 88

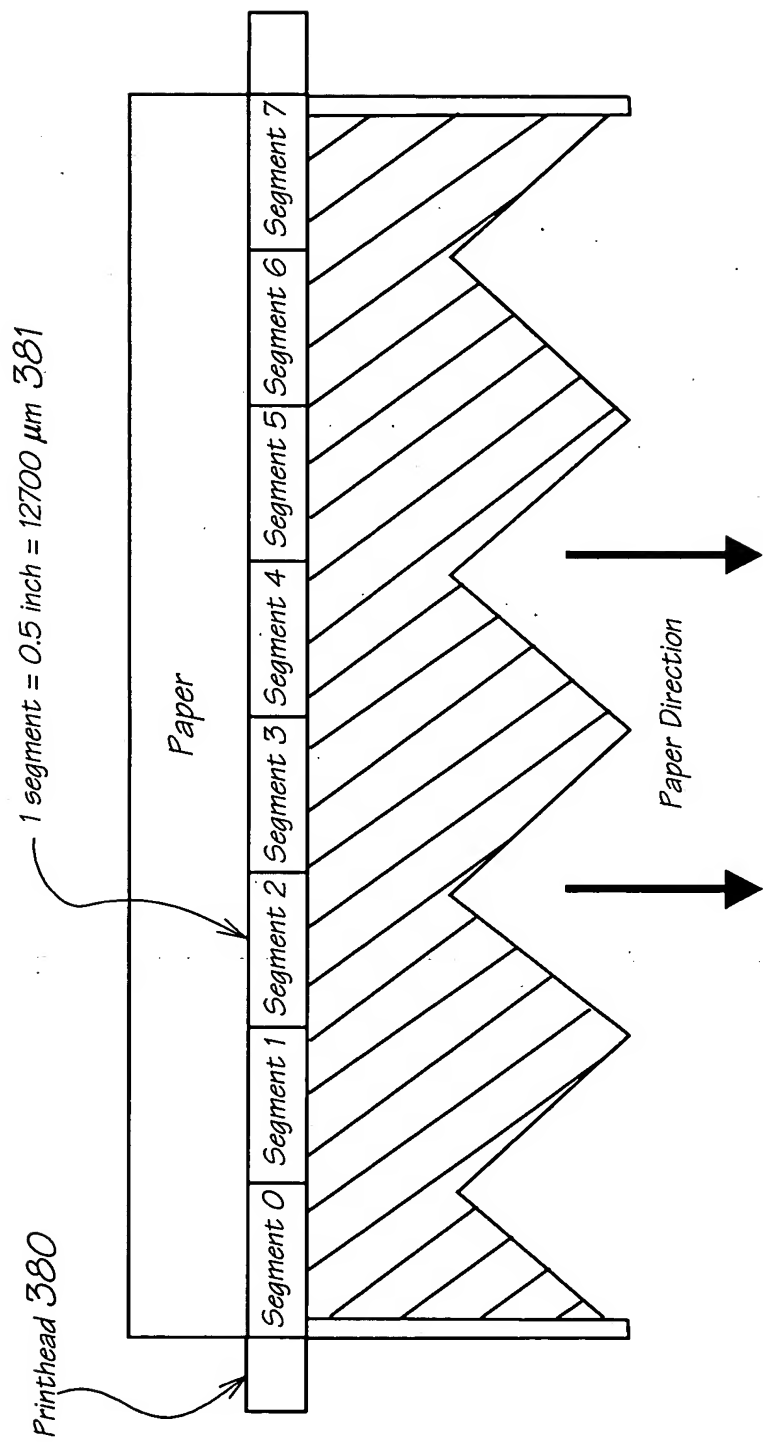
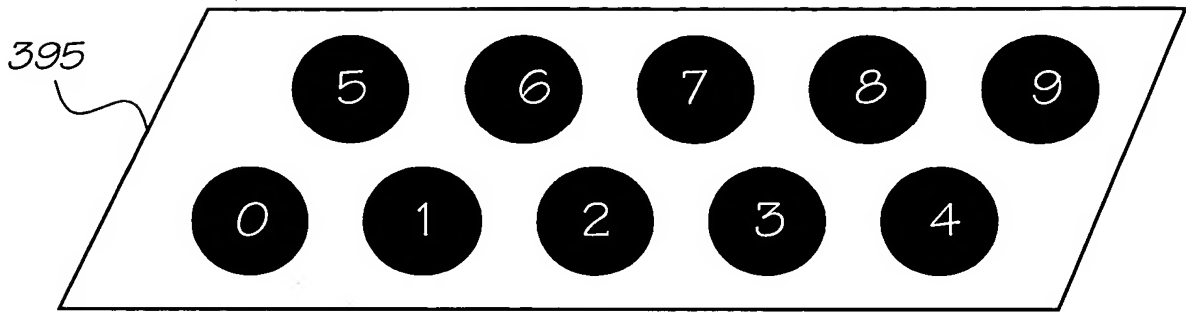


FIG. 89

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A single pod, numbered by firing order

FIG. 90

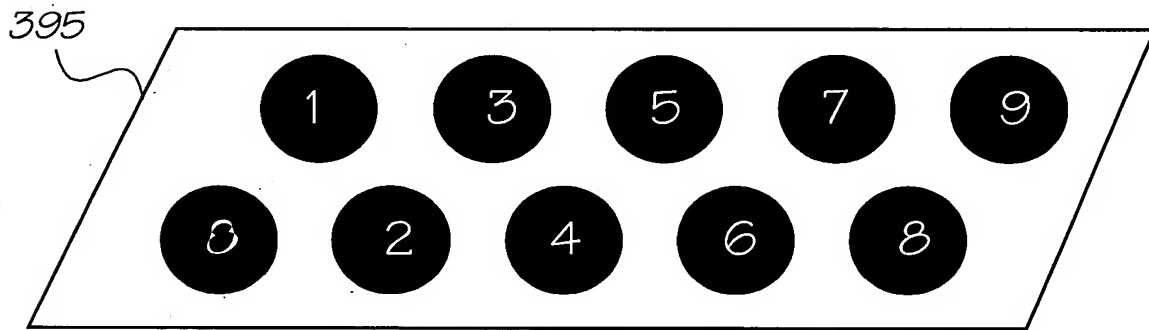


FIG. 91

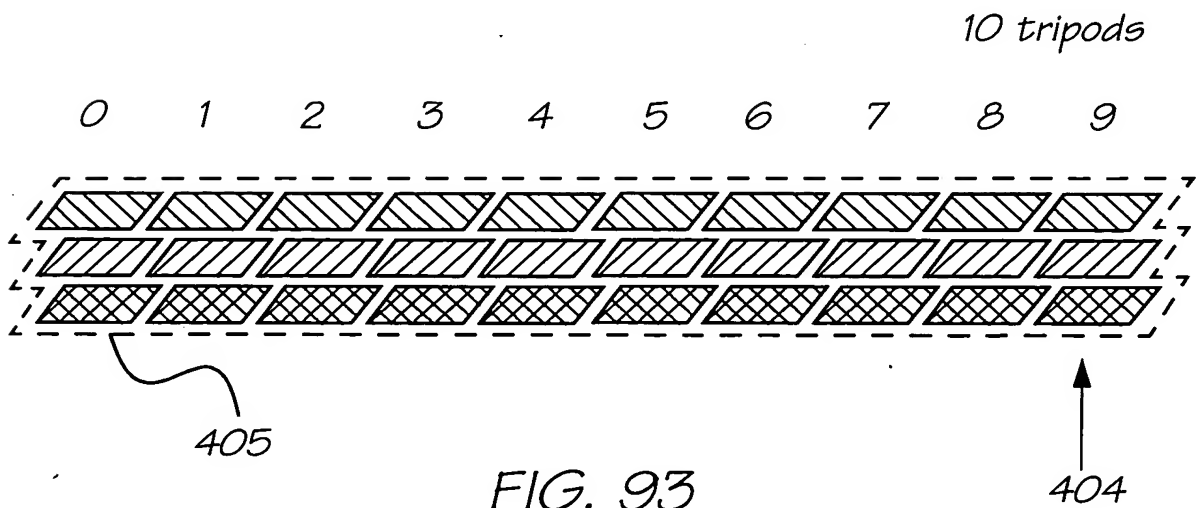


FIG. 93

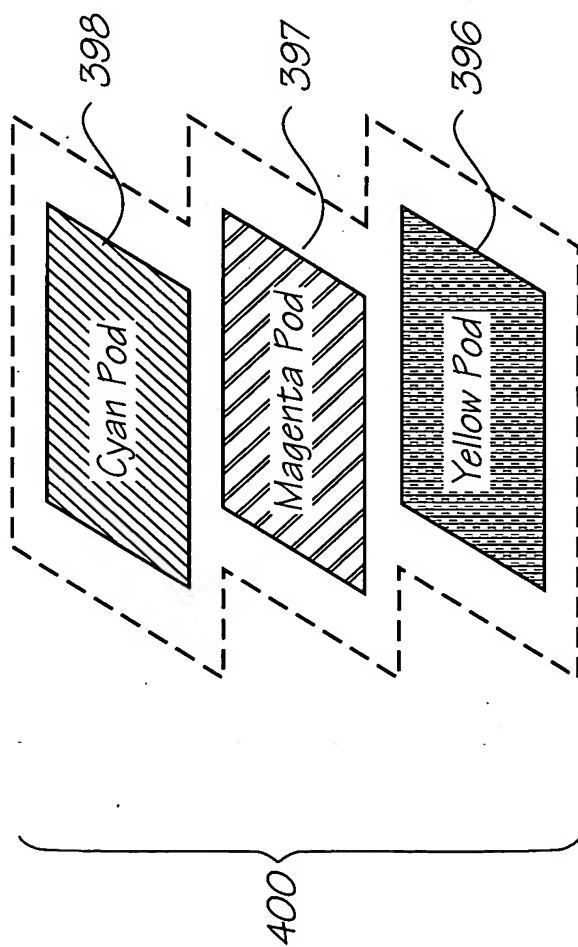


FIG. 92

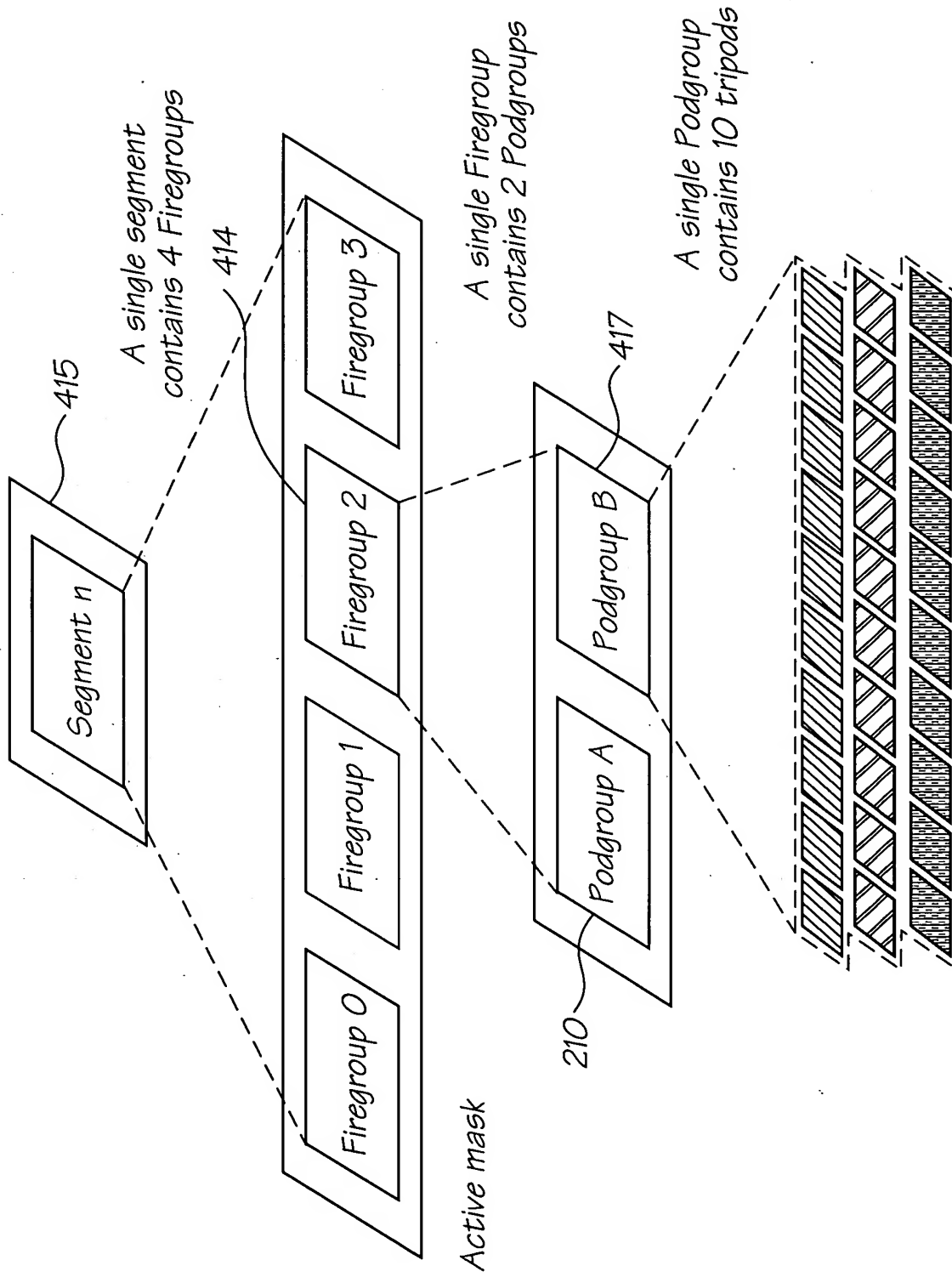


FIG. 94

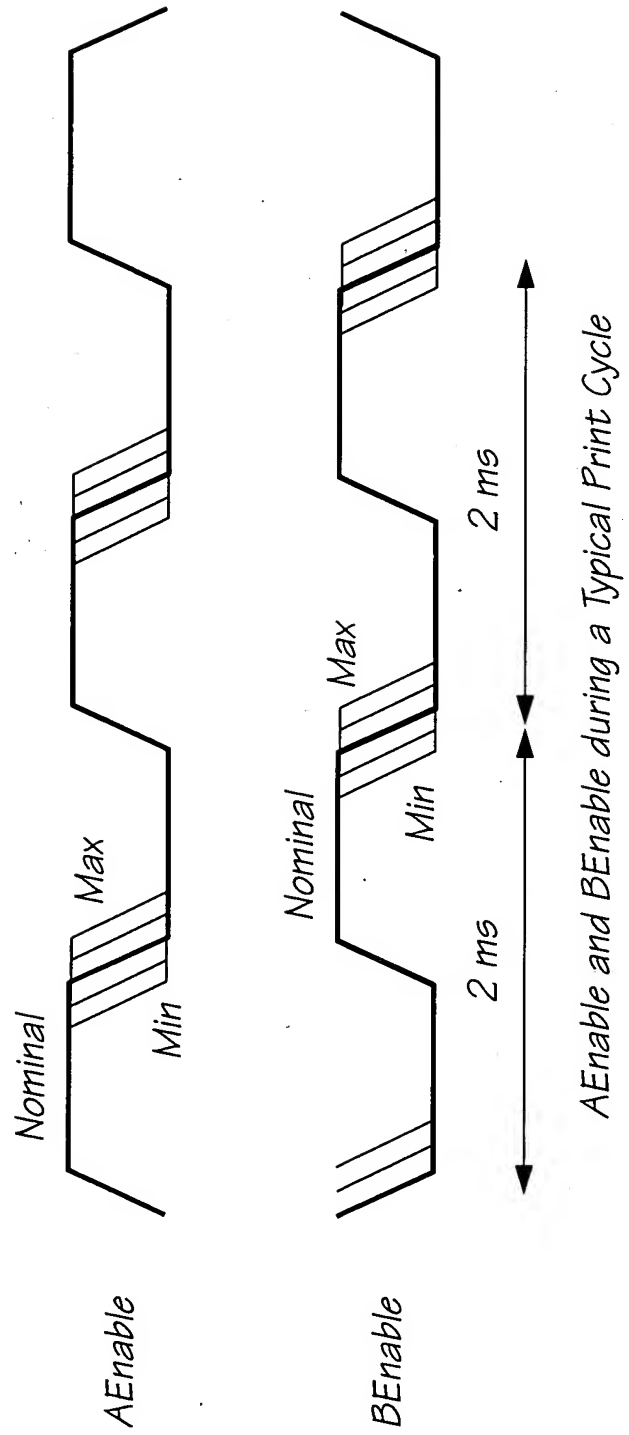


FIG. 95

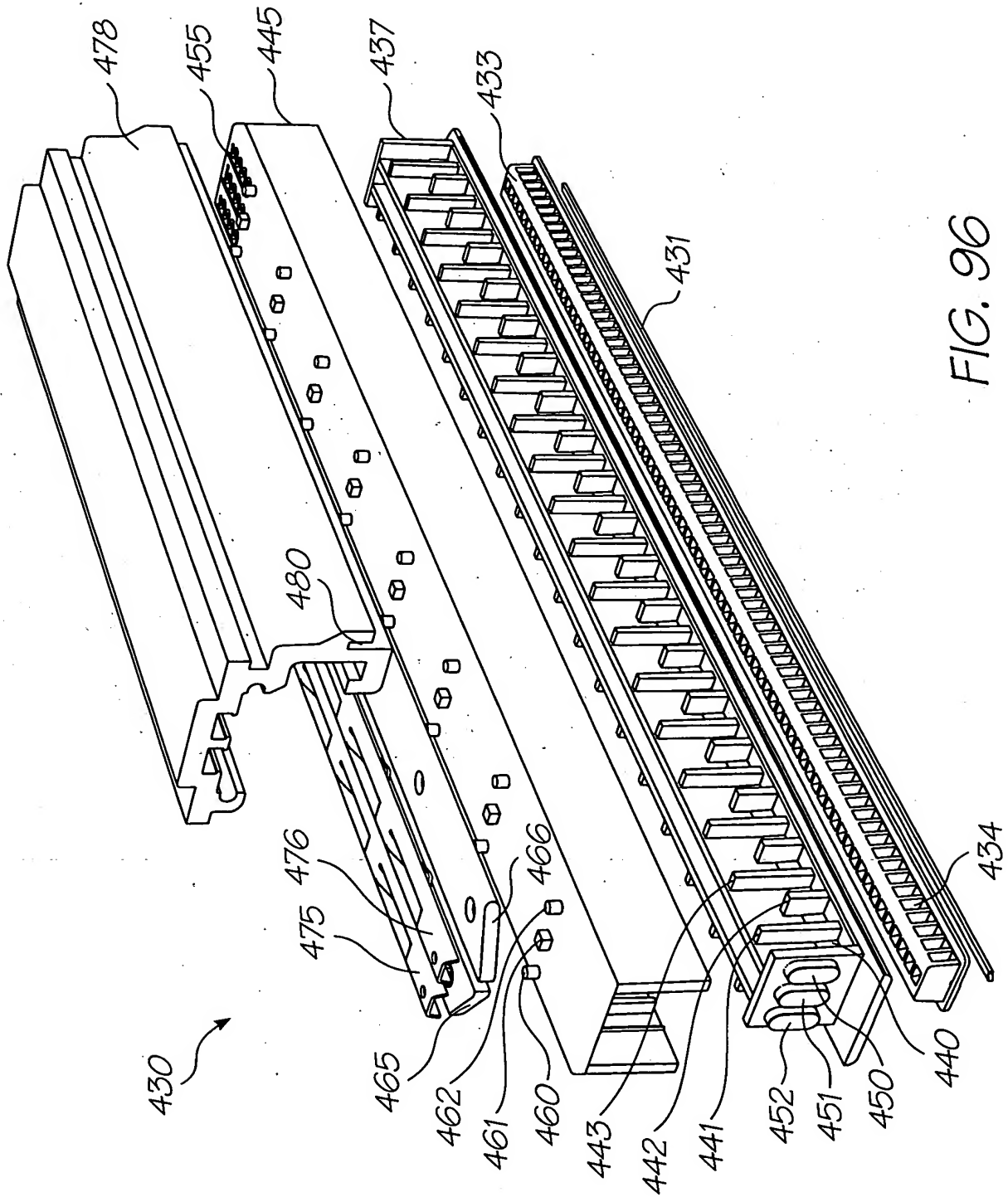
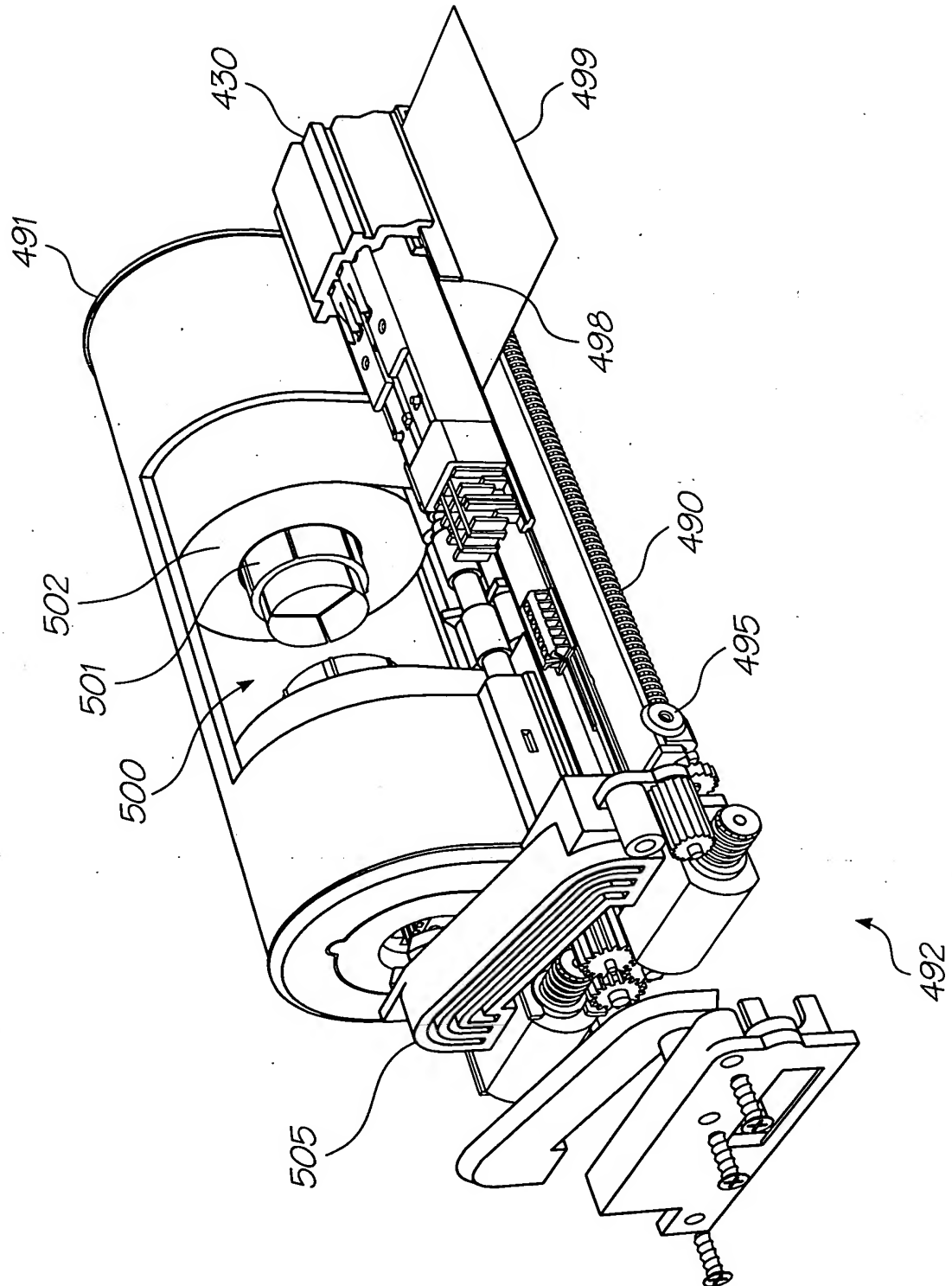


FIG. 96

FIG. 97



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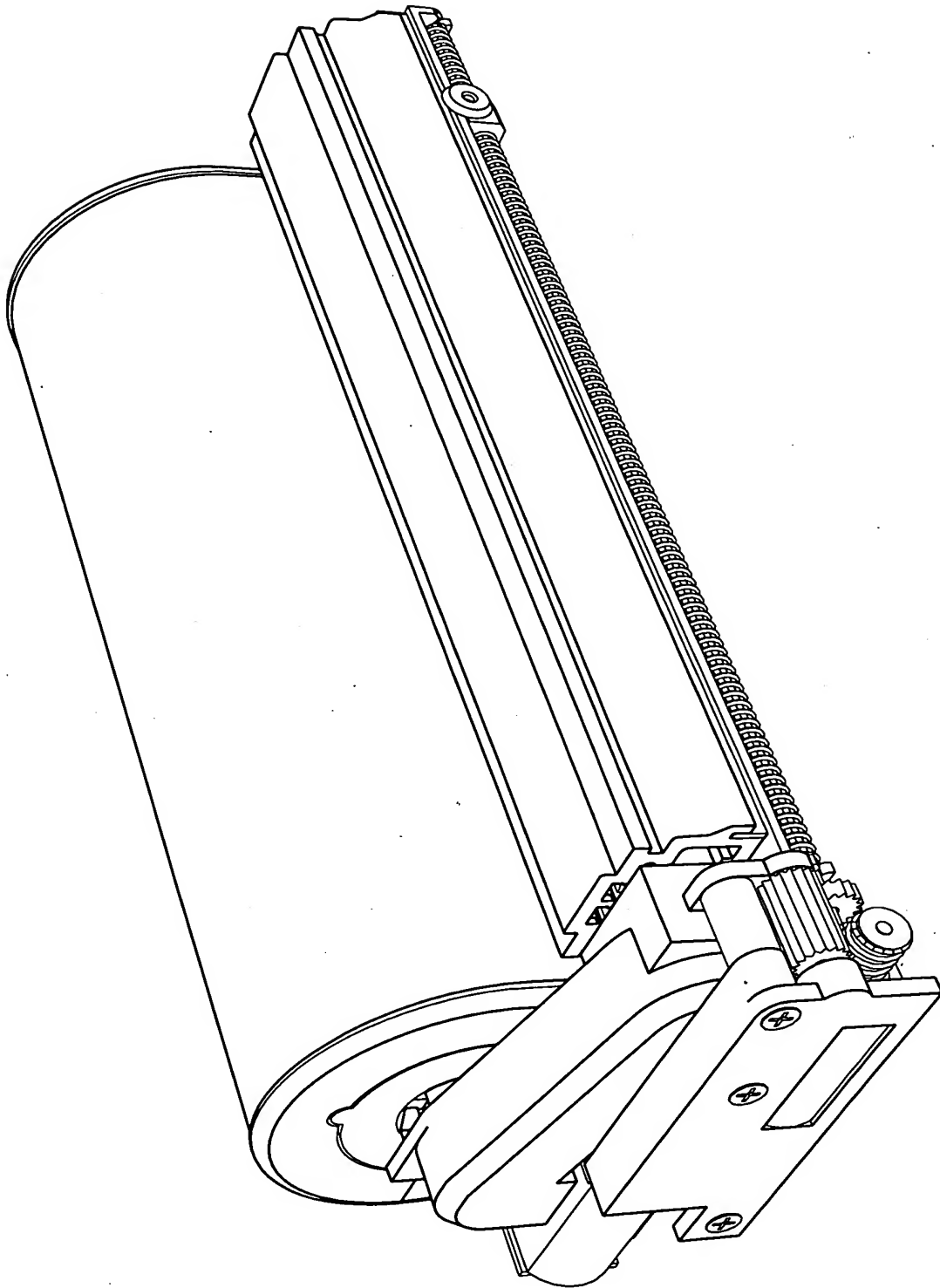


FIG. 99

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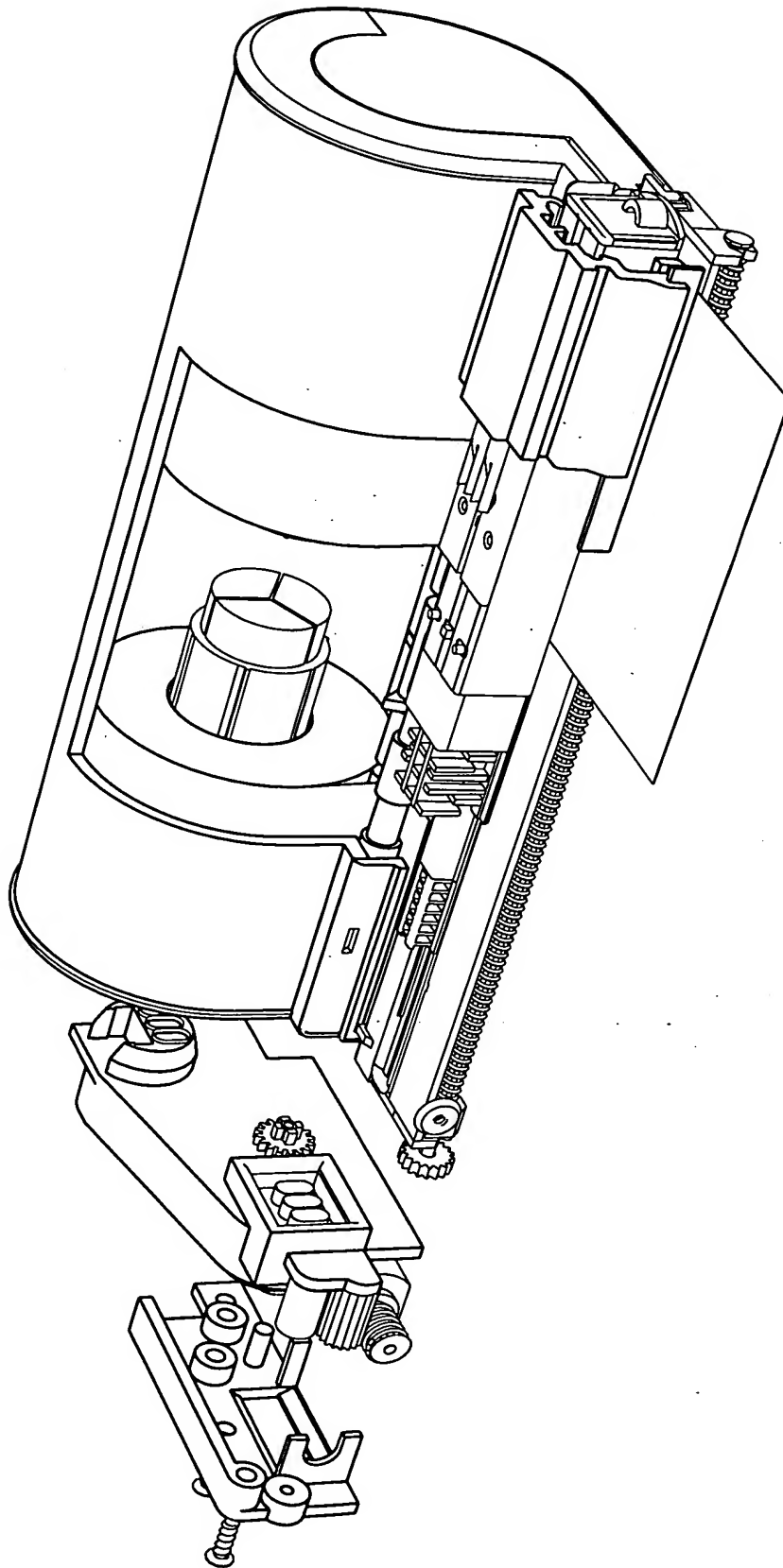


FIG. 100

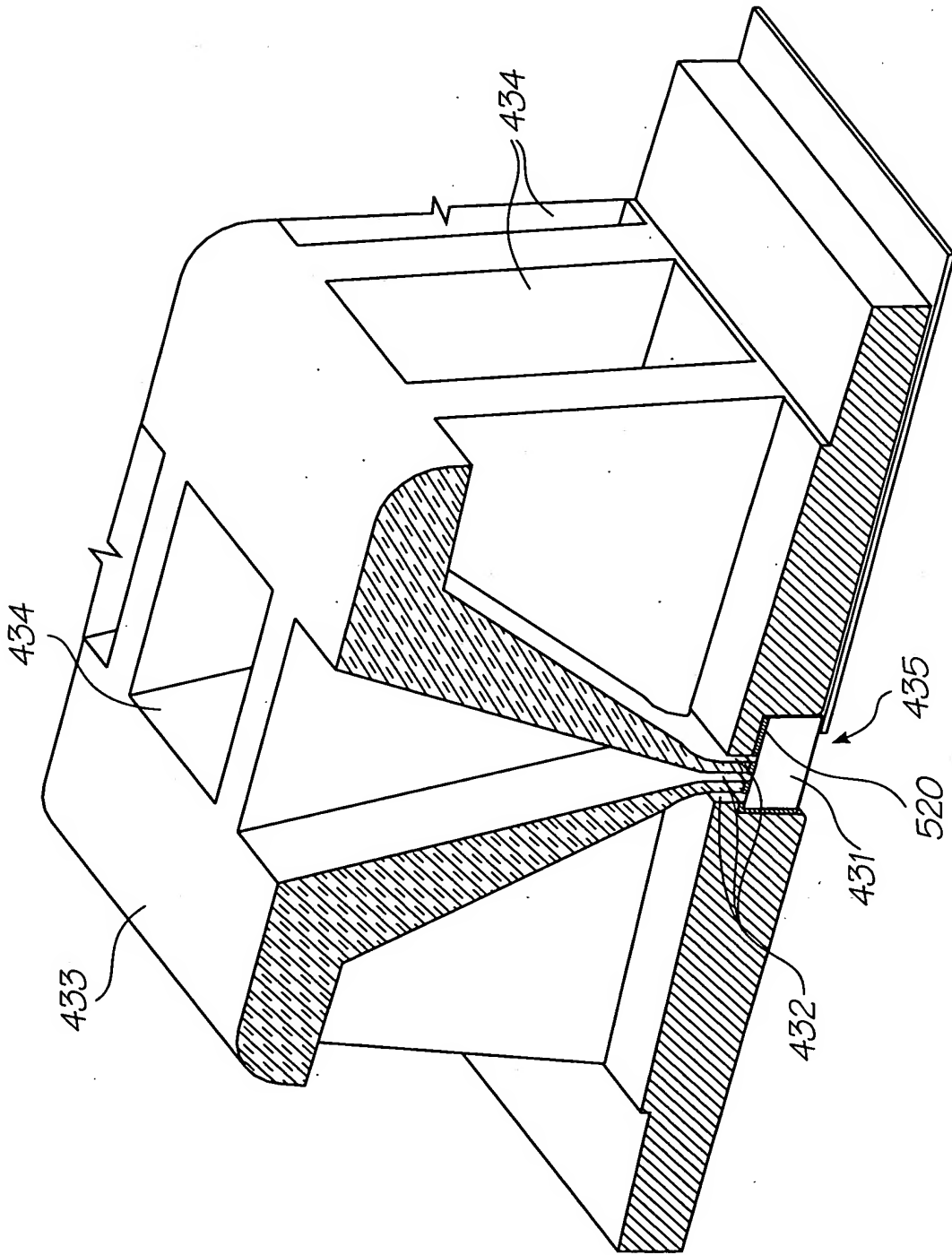


FIG. 101

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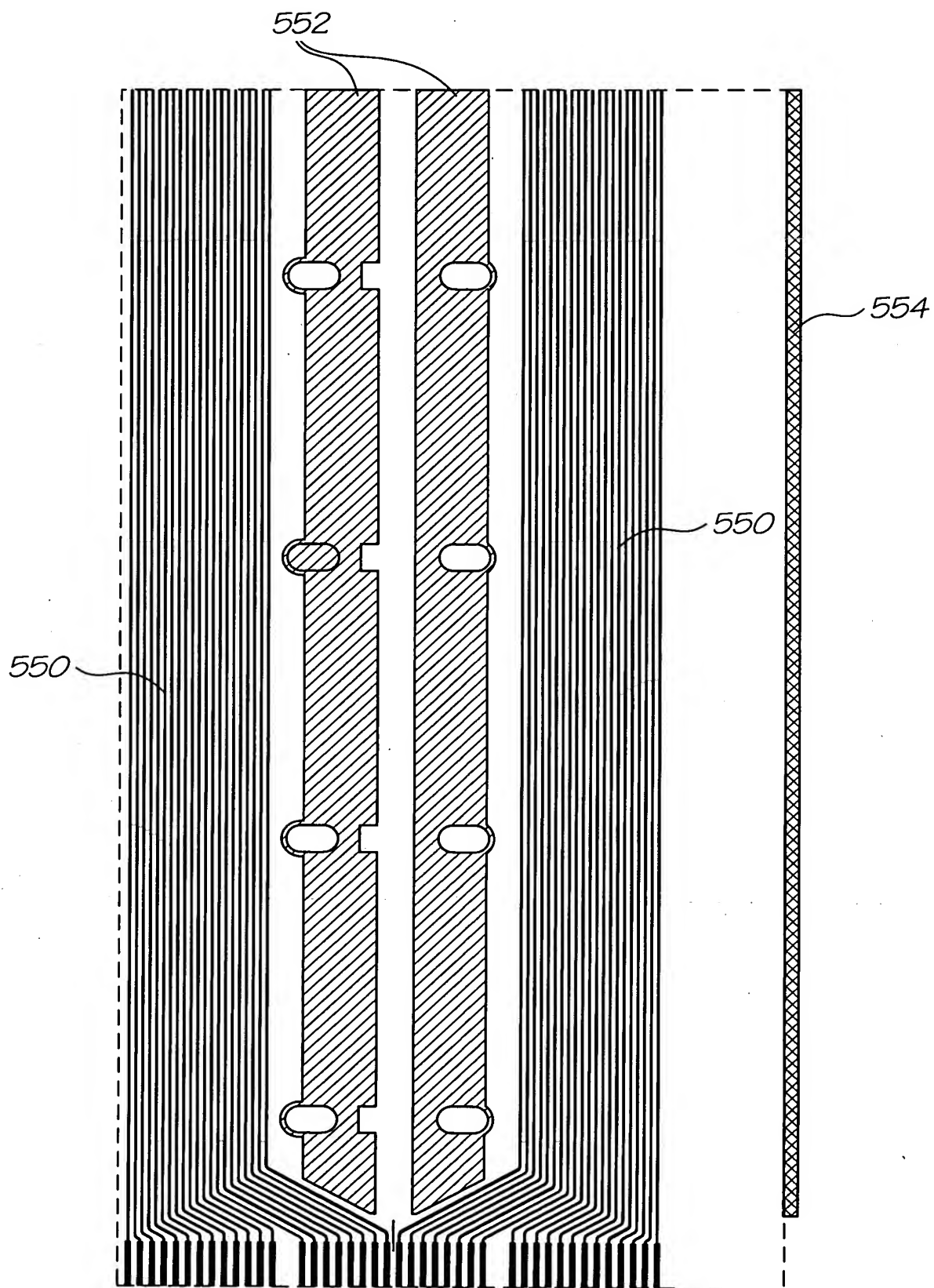


FIG. 102

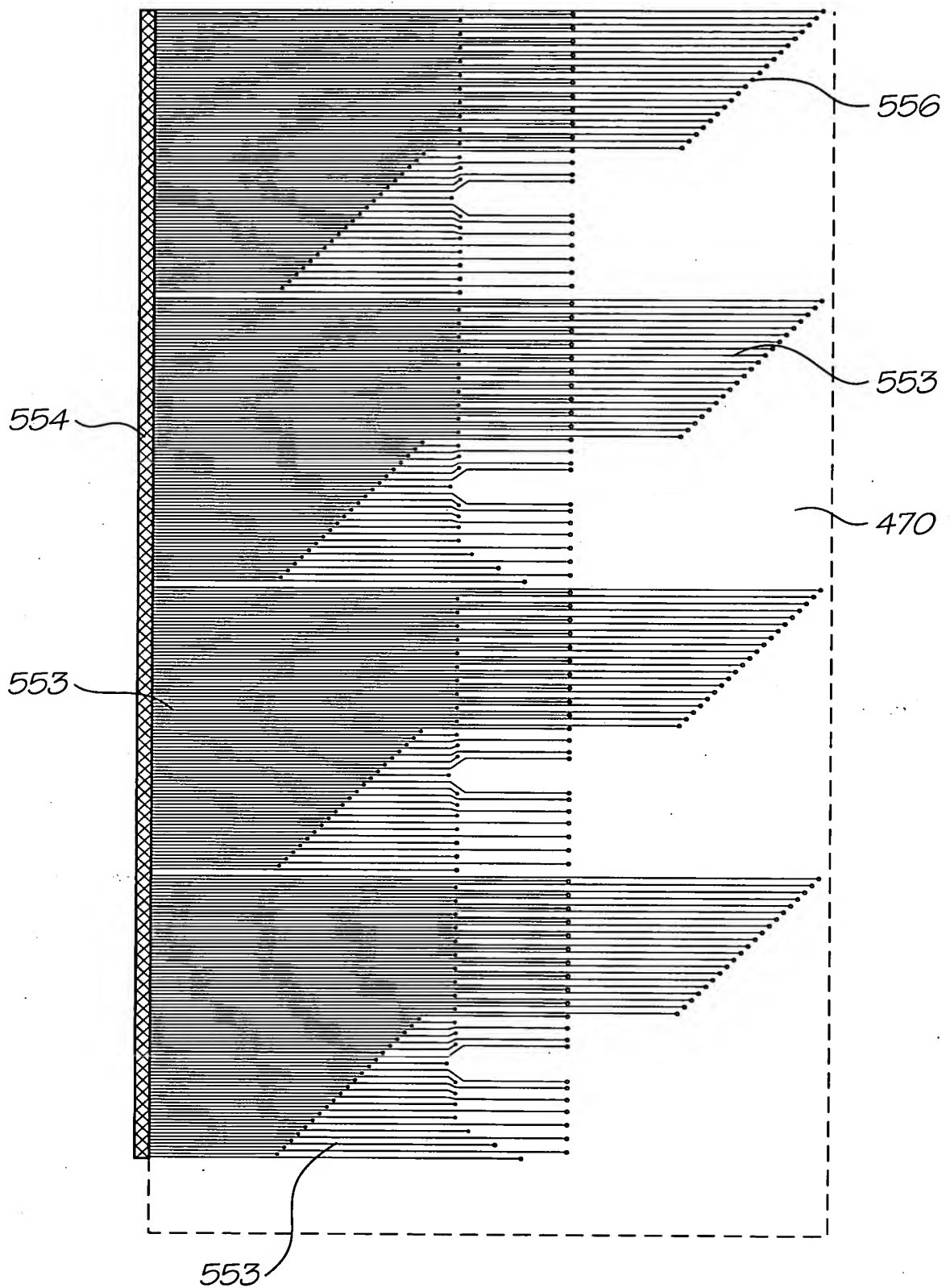


FIG. 103

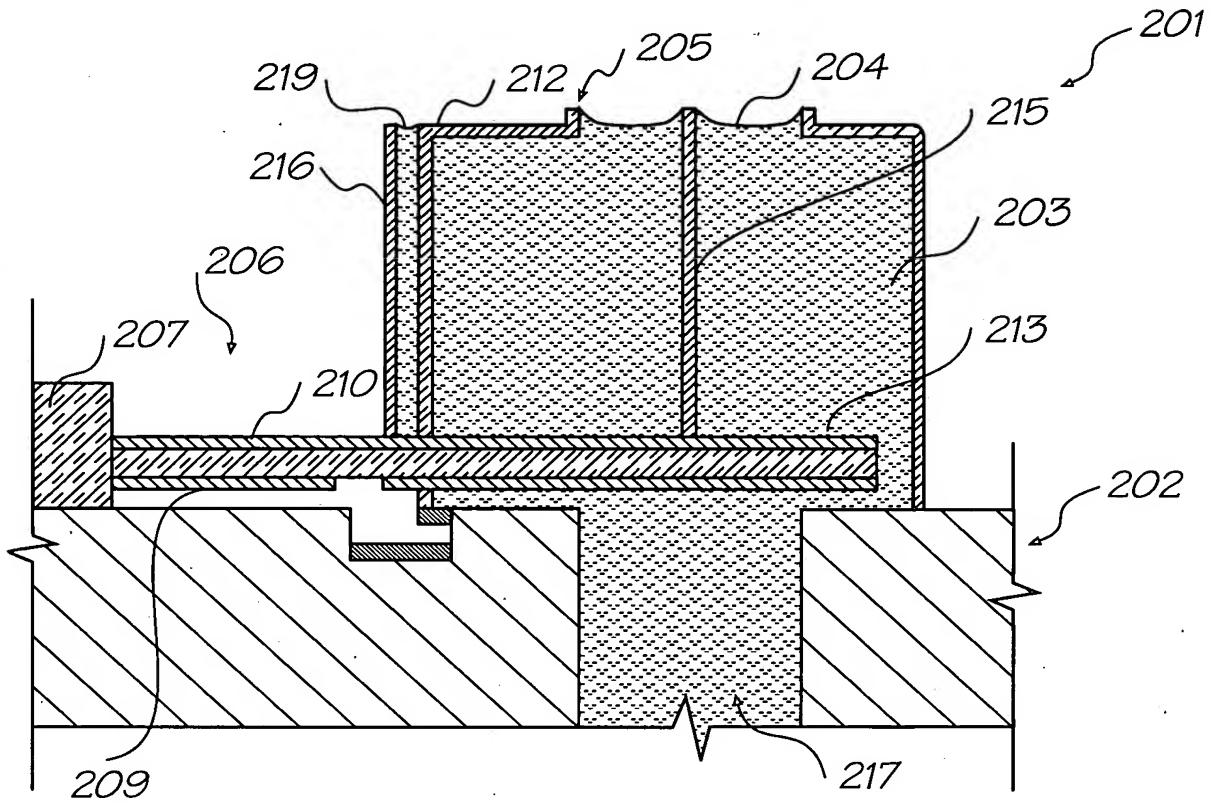


FIG. 104

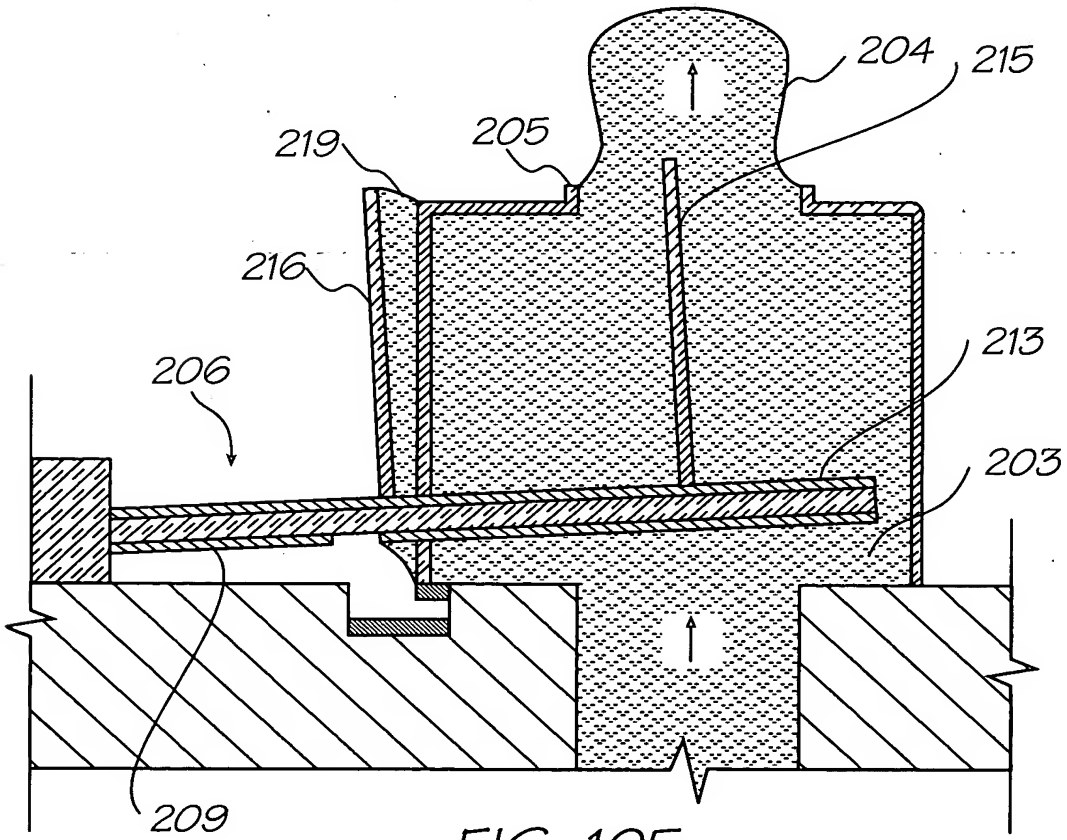


FIG. 105

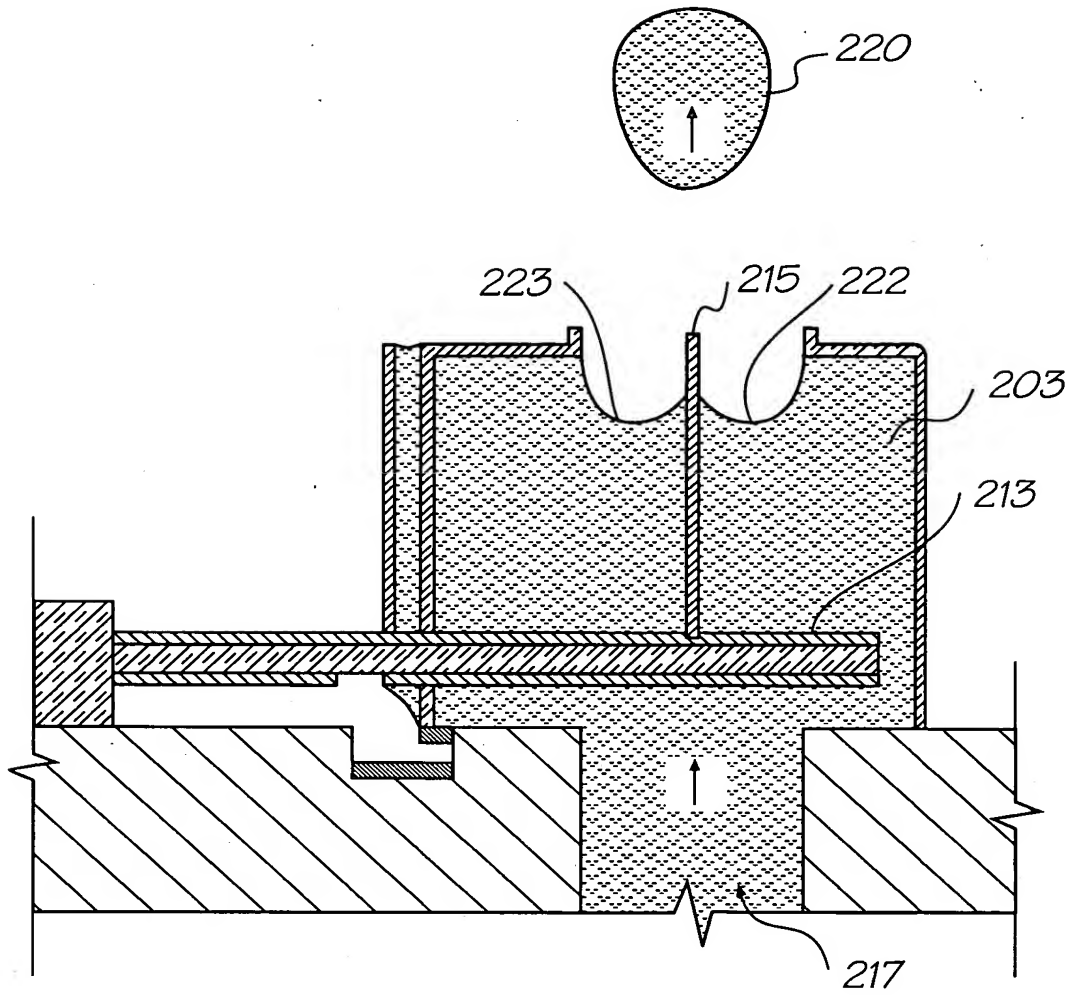


FIG. 106

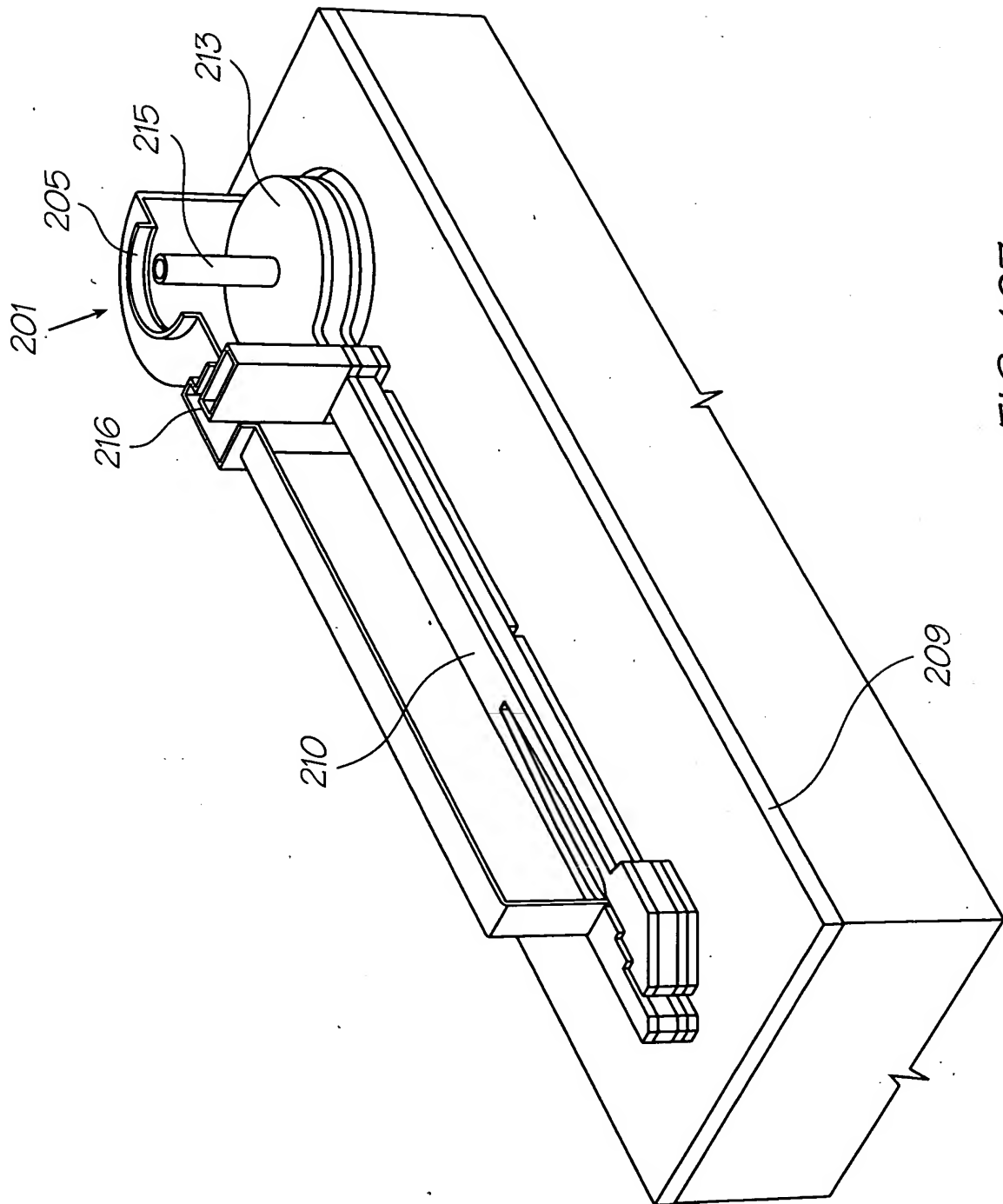


FIG. 107

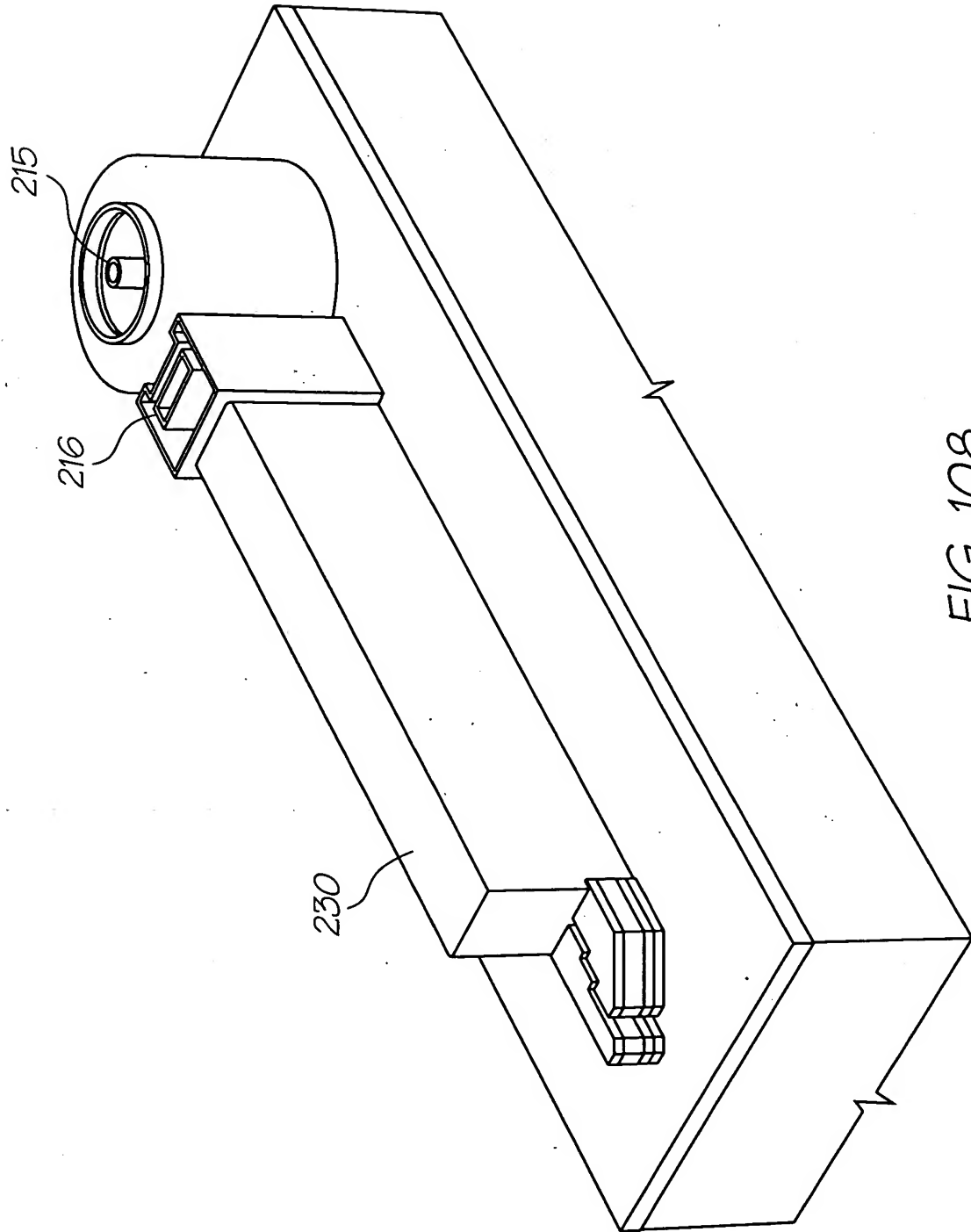


FIG. 108

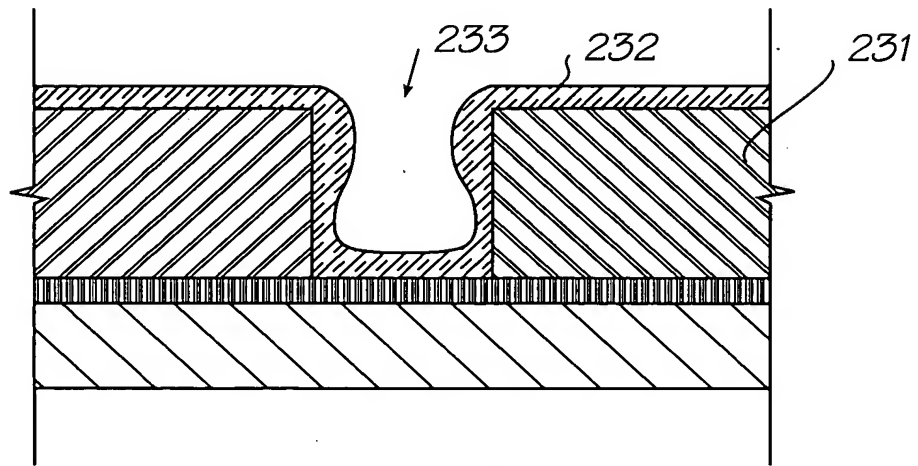


FIG. 109

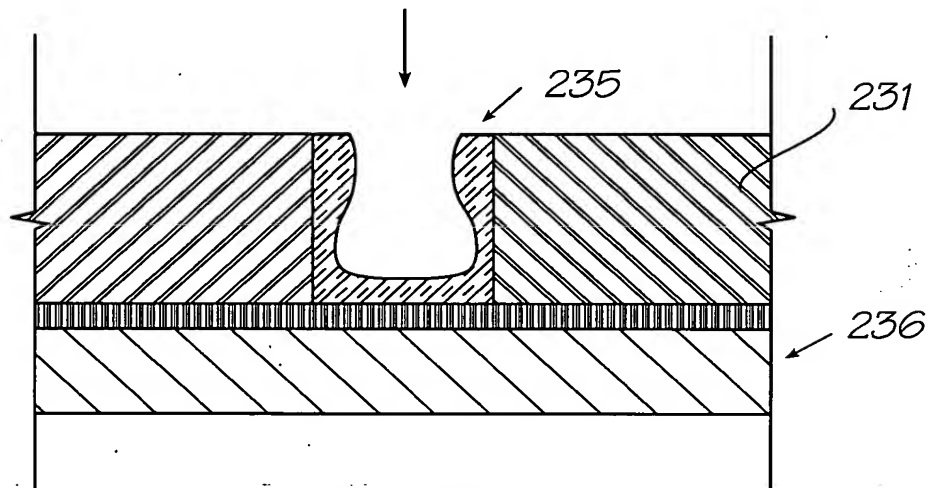


FIG. 110

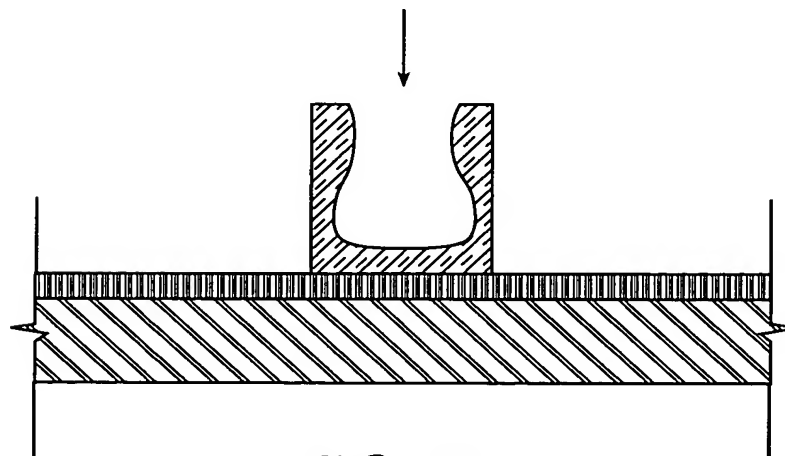


FIG. 111